

A BOOK OF CAREERS



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“We must first of all decide what kind of people we would like to be and what calling in life we would follow and that is the most difficult problem in the world.”

Cicero

World of work undergoes changes because of adoption of policy, technology, tastes and styles due to which occupations change. As a result information about them also changes. Information contained in this book, therefore, is subject to change. While making use of this book this important aspect should have to be kept in mind.

INTRODUCTION

It is well said that a major part of man's waking hours is spent in a vocation; his major contribution to his society and nation is through his vocation; his thoughts, ideas, behaviour and associations are conditioned by his vocation. Apparently therefore, man cannot afford to be negligent and careless of his work. This work has many levels and hierarchies from amongst which he plunges into one obviously to meet his physiological and psychological needs for the sole aim of earning satisfaction for himself, for his family, society and ultimately to his nation.

However, such satisfaction expressly is dependent mainly on a type of job man gets. By virtue of his potential—may be inborn or acquired—he is fit for a certain occupation or a limited group of them. It is indeed not possible at all for one to claim to perform any occupation with the same skill, efficiency, speed, accuracy and precision, especially where multitude of occupations are there and that are emerging because of scientific and technological advances and innovation. Both his potential and wide range of occupational world put restrictions on him to select such an occupation which will go in consonance with his natural endowments facilitating him to perform it with ease and comfort, instead of applying energy perforce.

However, in majority of cases in our country selection of a right type of an occupation is not paid heed to for certain flagrant considerations and flimsy grounds. The Indian youth sets tentative aim of completing education first and keeps a decision on selecting a career in abeyance. This paradoxical approach to one's own living is highly inimical since future way of life, i.e., a vocation—a job—an occupation depends very much on selecting subjects and courses of studies at a very young age. In case this does not take place, well, it may perhaps, lead to drudgery of life and unhappiness except where chance factor occurs or coincidence takes place. Relying on chance factor is equal to believe quack philosophy and ruining life. This should not happen.

To avoid vagaries of chance factor, coincidence or accidental happening young people should have to firmly decide, rather vouchsafe, that they would take recourse to a scientific method to obtain relevant information about themselves and about the occupational world to make a meaningful choice of a career. Once

they know what they are , they must also try to know how best they can utilise their potential. This process involves selection of a training course and entry into the occupation.

Varied training facilities coupled with a vast number of occupations is not available at one place to make the process of selecting an appropriate career. Knowing full well the difficulty of our young people an attempt has been made through this book to acquaint them with training and occupational opportunities to alleviate their tension.

Stating mere facts about training and employment opportunities may not create sufficient interest among the young aspirants of careers. To create interest about a particular subject field of employment I have adopted a method in three parts. In the first part, importance of a subject field of employment has been stated; in the second part a list of training institutions alongwith detailed information has been given; and in the third part employment opportunities of various levels and kinds are given and where possible their scope has been mentioned. However, my word of caution to young people would be to take this as guiding point and should not be read in absolute or strict form.

While trying to settle with a suitable career, certain factors become essential such as facilities, concessions and reservations to specific groups of persons. Information on them has also been included in this book.

The book, it is presumed, would be of immense use directly to young people, to counsellors/Career Masters/Vocational Guidance Officers who have been entrusted to guide young people in making a wise choice of a career and lastly to parents who are worried over problems of careers of their wards for want of information at one place.

It is hoped that the book will satiate the thirst of all these persons. Any suggestions to improve the contents of the book are welcome.

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CHAPTER 1

CAREERS IN PROFESSIONAL MANAGEMENT

In a recent study undertaken by Central Institute for Research and Training in Employment Service, New Delhi, on professional management, it reached a vital conclusion that for every 1000 employees there are 63 managers. This ratio of employee-manager if applied to work out figures of present professional managers managing various establishments and their future requirements, it unfolds a vast number of professional management careers for new and desirous entrants in the field.

The data compiled by Directorate General of Employment and Training with regard to the total employment in the organised sector reveals that there are 240 lakh people employed in it. This will lead us to conclude that there must be round about 15 lakh managers occupying positions in the professional management field on the basis of the employee-manager ratio indicated above. Directorate General of Rehabilitation claims that some 60,000 service people get retired every year from Defence Forces. Even if we take 5% of the retiring employees from the organised sector, some 75,000 managers would retire every year which means that these are clear career opportunities for those who want to enter the field every year. Add to this developmental activities and stress on self-employment which in turn will require more number of professional managers.

There are 44 institutions throughout India which offer MBA (Master of Business Administration) degree with an intake capacity of 2061. There are other institutions/universities which offer diploma courses in Business Management and other professional management courses like Marketing Management, Personnel Management & Labour Welfare, Industrial Management, Sales Management, Industrial Relations Management, Export/Import Management, Materials Management, Tourism & Travel Management, Factory Management, Office and Systems Management, Project Management, Production Management etc. However, by far the most all these institutions may not be able to turn out the required number of professional managers. The turned out professional degree/diploma holders may not, therefore, find much difficulty in securing employment under one organization or the other. Looking to these realities it can be concluded that there are

excellent opportunities of employment in this professional management field.

We are swiftly moving towards modernization of every national activity which invariably requires trained professional managers. The entry of professional managers with relevant training in appropriate skills has come to stay in India and hence young people should, in accordance with their natural endowments, *select one of the fields of professional management as their future career.*

Managers are considered to be pillars of organization and unless they are well and adequately trained they will not bear stresses and strains and load of management work. Training in appropriate management skills will definitely discipline and nurture trainees to accept challenges thrown out by this management field. Any haphazard attempt to rush into the field will result not only in failures but will be inimical besides perpetrating harm to the industry.

The admission qualification to MBA course which is currently available is a Bachelor's or Post-Graduate degree in any discipline such as Agriculture, Arts, Commerce, Engineering, Law, Science etc, with at least 50% marks in aggregate. However, for Personnel Management and Industrial Management, candidates should be Graduates/Post-Graduates in subjects like Psychology, Sociology, Economics, Public Administration, Social Work, Engineering with 60% marks. Commerce and Law graduates also have equally good chances for admission to diploma or degree courses in this specific field.

From the 6th Five Year Plan penetration is being sought in rural areas. To handle rural economy efficiently, Institute of Rural Management has been set up at Anand in Gujarat having a two year course called Post-Graduate Programme in Rural Management (PRM). It also offers short-term courses for policy makers, directors, general managers etc. Similar training courses are being offered by Institute of Rural Management, Gandhigram (Tamil Nadu) and Xavier Institute of Social Sciences, Ranchi.

Of late, it is a widely accepted fact that a professional manager is an effective weapon in effecting proper and just utilization of available human resources. Accordingly, a manager plays a crucial role in planning, organising, coordinating, marketing and controlling various activities not only of big establishments but even small industrial units too.

Positions in Managerial Cadre. Industries have various aspects such as social, public welfare, political, business and industrial relations in which managers have a significant place. Various career opportunities are open to young people of both sexes at lower, middle and senior levels of managerial cadres. You must

be certainly interested to know about the nature of duties performed by each one of them and the way they enter into the profession.

(1) Lower Level Managerial Positions. Industrial concerns of repute and standing recruit management trainees to help their executive cadres. Recruitment is made through advertising vacancies and candidates are supposed to take a written test followed by an interview. Educational qualification prescribed for such trainees is a university degree in any discipline in first or second class. However, in most of the industries the practice in vogue is to limit entry into the Management Trainee/Executive Trainee to those who have already qualified into the respective branches of management. These management trainees get field experience on which they can prosper in their careers.

(2) Middle Level Managerial Positions. Positions of divisional or branch manager, personnel manager, accounts manager, store manager, sales manager, public relations manager are middle level management posts who are put into decision-making authority in their respective spheres. Recruitment to these posts is made through advertising vacancies. Candidates interviewed and found suitable are offered appointments. These posts invariably require work experience in their sphere of activity. Salaries and perks are attractive.

(3) Senior Level Managerial Positions. Decisions on policy, procedure, finance, production, sales and other matters form the backbone of progress of an industry. The personnel who are responsible for such decisions are the top executives or managers who enjoy different designations as Chief Personnel/Marketing, Works Manager, Financial Controller, Executive Director, Managing Director, Public Relations Manager and so many others. Naturally then, these positions require thorough, long and mature experience. Backed by good academic record these people can soar ahead successfully.

Qualities Required. Gone are those days when the myth was that any person can do any job. As specializations become indispensable in the occupational world because of new scientific and technological advance, it has also become imperative to have a certain set of personal characteristics for such specialised occupations. The first and foremost personal quality that is required for occupations in the professional management is leadership since these persons are required to lead workers, give a definite and compact set of guidelines and also watch progressive development. Alongwith, they should also have to have managerial ability, conversational ability, emotional stability, maturity and of course, technical knowledge and business acumen. The fact is that they are to deal with persons each being a problem by itself by virtue of their different natural endowments, environmental forces, cultural background, social status backed up by education and training.

Psychology of each human being has to be understood in its totality, each person should be respected duly. A manager represents management and he should work for its interests. Yet, management is so small a spectrum of social structure to which all people belong including those workers the manager supervises. In all cases, human resources cannot be treated as other material since this material has the thinking capacity. Therefore, a manager's job becomes an extremely delicate and sensitive affair. Sometimes, managers become a sandwich between the interests of the management and those of the workers. The managers, through their knowledge of human behaviour and overall situation of the company have to find a way out so as to perpetrate least harm to both the types of interests. There lies their acumen and strategy in the trying situations.

Types of Management. There are various branches of management. A few of them have been indicated below with short description and types of personnel work therein.

(1) Personnel Management. Man is a centre of attention. The fact that work is done primarily by people, they attract the first attention. There are numerous problems of workers which are to be attended to. This is the work of the personnel department. This department carries out functions as recruitment of required personnel, their training and re-training, placing workers in their appropriate positions, effecting promotions and transfer etc. It also looks after other types of functions such as sanctioning of leave to workers, observing absenteeism, have a close look at labour turnover, maintaining discipline among workers, redressal of their grievances, termination of services of workers etc. As we have already seen that each individual in itself is a problem, imagine the situation where thousands of people work. What a density of problems would be there to face by the personnel department. That is why the personnel department forms a key department in the whole set-up of an industry.

Persons working in this department are called Assistant Personnel Officer, Deputy Personnel Officer, Chief Personnel Officer, Assistant Personnel Manager, Deputy Personnel Manager, Chief Personnel Manager, Labour Welfare Officer. All these officers must have requisite educational and professional qualifications and also adequate experience. These persons are employed in banks, insurance companies, hospitals, manufacturing firms, air lines, shipping companies, railways, road transport, public sector undertaking, Central and State Governments, Local Bodies and other autonomous bodies. In addition to better salaries, these people enjoy handsome perks.

(2) Production Management. Physical output of an industry has to be planned systematically. The production management directs operations, coordinates them and also controls them. Three important questions that are to be answered by this department are,

How—When and Where. The personnel working in this department must have high quality of innovative abilities and excellent communication skills. The department has other sub-branches as product research, development and design, process development and design, specification and producing materials and supplies, standardization, inspection, testing and quality control, cost analysis and control, study and preparation of work standards and methods.

Production Management is manned by lower as well as higher managerial positions. They are Assistant Production Manager, Deputy Production Manager, Production Manager. Attractive salaries are there with good perks.

(3) Finance Management. This department enjoys a status next only to personnel department since financial resources are to be judiciously expended. It is responsible for financial policies and executing financial programmes. Financial Management is a part of all economic activities and hence, all organizations irrespective of being big or small require services of finance personnel.

The Finance Management has different positions as Management trainee, Assistant Manager, Deputy Manager, Manager, etc. All these persons must possess requisite professional qualifications. These people also enjoy good salaries and sumptuous perks.

(4) Materials Management. Raw material required for bringing out finished products at minimum cost with high quality and without wastage has to be meticulously looked after. Amongst various resources utilised for manufacturing a product, material forms nearly 60% and wastage of such material may ruin the very business. The materials management functions are as planning, sourcing, purchasing, moving, storing and controlling. Through these activities materials management improves profitability.

The materials management is headed by a Materials Director with subordinate positions as Materials Manager, Stores Manager, Traffic and Receiving Manager, Purchase Manager etc. They are paid handsome salaries in addition to the usual perks.

(5) Marketing Management. Marketing Management has aptly been defined as "The performance of business activities that direct the flow of goods and services from producer to consumer or user". They must answer questions like who, what, how, why and when. They study sale reports, analyse sales data, supervise, analyse sales expenses and customer reports to achieve targets.

The positions in the department are Assistant Marketing Manager, Deputy Marketing Manager, Senior Manager and Chief Manager with good salary and perks.

All these departments are a must in big industrial firms and public sector undertakings. There are other facets of professional management in other spheres like Bank Management, International

Management, Rural Management, Hotel Management, Hospital Management etc.

Persons with requisite personal qualities, financial resources etc., should consider these occupations and save themselves from drudgery of life, wastage of personal and national interests by engaging in unsuitable jobs. They should prepare from the beginning itself to avoid repentance later. They should collect relevant information in advance so that last minute haste is not called for.

CHAPTER 2

CAREERS IN BANKING INDUSTRY

Among the major industries that offer the best service conditions to their employees, banking industry is foremost. *It becomes, therefore, everybody's choice* to work in one or the other bank. However, stray attempts and that too, without knowing much about the industry result into failure *and wishes remain unfulfilled*. Knowledge of banking industry as to how it functions, occupational opportunities available in it, and the service conditions it offers should have to be collected by prospective candidates.

Banking industry now has come of its age and is helping the nation's economy prosper. With a stress that has been laid by the Government on the functions of the industry, this industry has a lot to offer to those who would like to have a paid job in it or those who want to raise credit from it for their self-employment *opportunities*. Both the categories of people banking industry serves well.

Scope. Banking industry is now on the verge of explosion of its size. The mere look at its present form and the form that would be reached by it by the turn of the 7th Five Year Plan *i.e.*, 1990 will give enough indices of opportunities this banking industry has in store for young people. Following table indicates the prospects.

Employment under Banking Industry (present and future projections)

	<i>Present Position</i> (December, 1982)	<i>Future Projections</i> (December, 1990)	<i>Overall Increase</i>
No. of Banks	40,400	81,000	40,600
Employment	7.0 lakhs	13 lakhs	+6.5 lakhs
Officers	1.7 lakhs	3.3 lakhs	+1.6 lakhs
Clerks	3.8 lakhs	7.5 lakhs	+3.7 lakhs
Subordinates	1.5 lakhs	2.7 lakhs	+1.2 lakhs

Interpreting the table in absolute terms it can be said that the industry would be more than doubled by the turn of this decade throwing over 6 lakh job opportunities for the prospective job-seekers. There is, though not enough time for preparing oneself for higher occupational careers in the industry, yet it can safely be said that there would be ample opportunities for the job-seekers to get themselves prepared for the banking jobs looking to the boost that it is receiving and the rate of expansion.

To have a calculated, planned and easy entry into this industry, therefore, it needs to be considered by young people by getting acquainted themselves with the industry.

Banks perform two major functions: (i) Lend money to their customers and also (ii) take care of customers' money and valuables on easy terms. Formerly, before the advent of the banking organisation, it was the money lenders who ruled the roost. Exorbitant rates of interests, manipulations, machinations, coercion and exploitation of the illiterate people was the order of the day. In spite of hard labour these people were never allowed to be out of their debts. The situation has strikingly changed with the introduction of the banking system and now it has become a vital organ for the economic development.

Types of Banking Institutions. Reserve Bank. This is the central bank performing regulatory and promotional activities. Established in April, 1935, it functions through its several departments. It controls issue of paper currency, loaning and management of public debts, activities of commercial banks, maintenance of external value of a rupee, collection and publication of monetary and financial information. Apart from this, this bank supervises other banks. It is headed by a Governor who is the chairman of the Central Board of Directors responsible for bank's affairs.

The other banks are classified as scheduled banks and non-scheduled banks on the basis of minimum capital and reserves.

Banks are functioning for earning profit. They mobilise savings of society for developmental activities. Allied to this major function they are responsible for payment of premia, rent, collection of cheques, bills, promissory notes, dividend etc., on behalf of customers. In addition, they act also as consultants in buying and selling stocks and shares for the customers. To facilitate customers they extend help to them through credit instruments like credit cards and travellers cheques, accept bills of exchange, ensure safe custody of valuables and documents, make transactions of foreign exchange business and provide excellent services to their customers.

Recruitment and Service Conditions. The occupational opportunities open for job-seekers in banking industry are numerous—grouped into three categories as officers, clerks and subordinates. In actual they are: Agricultural Extension Officer, Technical

Officer, Veterinary Officer, Chartered Accountant, Law Officer, Cost Accountant, Manager (Publicity & Public Relations), Systems Analyst-cum-Programmer, Personnel Officer, Hindi Officer and various types of clerical personnel as clerks, stenographers, typists, machine operators, etc.

Recruitment in the Nationalised banks for various positions is made through nine Banking Service Recruitment Boards to cater to the needs of staff of the banks on regional basis. The Boards issue advertisements in leading newspapers for filling up the posts. Candidates are required to apply in a prescribed form of application. The advertisement contains all the relevant information. Candidates are advised to go through the advertisement minutely before filling up an application. Candidates are required to pay Rs. 20 as examination fee for one post and in case they are applying for more than one post for which they intend to contest they have to pay an additional sum of Rs. 10/- for each post.

Recruitment Procedure of Clerical Post. A written test is held on a convenient date (mostly Sunday) at important towns in the country. The test is objective as well as descriptive. The objective test comprises problems on reasoning, clerical aptitude, numerical ability and English Comprehension. The descriptive type test comprises an essay, precis and/or letter writing in English. Candidates contesting for posts of agricultural clerks will be tested in agricultural knowledge. For those who want to contest for stenographer's post they must possess minimum speed in stenography and typing of 80/30 in English and 60/25 in Hindi respectively. Age limit for these vacancies is 18-26. Educational qualifications prescribed for these posts are as under:—

- (1) Any University Degree.
- (2) Second class in Higher Secondary Examination/Intermediate Examination or equivalent.
- (3) First class in 10th Class of 10+2 pattern or equivalent.

Concessions in age, educational qualification, examination fees are available in addition to reservation of posts for scheduled castes/tribes/ex-servicemen.

Successful candidates placed sufficiently high in ranking in the written test and depending upon the number of posts to be filled in are called to appear for an interview. Final selection rests with the success in the interview. Unemployed candidates belonging to SC/ST categories called for interview are paid second class rail fare/bus fare if the distance is of 80 km. each way.

The pay scale for these vacancies is Rs. 520-1825 (revised). Graduates are granted two additional increments in the scale and stenographers are paid a special allowance. As per posts available in participating banks successful candidates are allotted to them. Initially these candidates are placed on probation for six

months. After successfully completing the probation period they are confirmed in the service. Bank employees also enjoy perks.

Candidates desirous of entering into Banking Service will have to work really hard to become successful in the written test as well as interview. In their own interest they should prepare themselves. At the time of application, the Board supplies specimens of the types of questions that are put in the written examination. Candidates should study these problems thoroughly and prepare themselves. They can purchase books from the market for really good preparation. They must also learn techniques on how to face an employment interview. The competition is very tough. There are innumerable candidates who take the examination. You have to face this tough competition and forge ahead. Those candidates who have service attitude, hard work, initiative have a bright future in the banking service. While in service there are many more opportunities to enhance career by acquiring additional qualification. Candidates should not become complacent with the position they initially get otherwise there are occasions to repent and feel frustrated. Clerical positions in the banking industry form a major chunk of its employees and the success in it depends upon the efficient and support services provided by these employees. Hence, it should be borne in mind by these employees that their contribution to the total development of the country's economy largely depends upon them. There should not be a room for laxity in the service.

Recruitment of Management Trainees/Probationary Officers. Recruitment of these people is made to fill up posts at the middle management level. They are recruited on All-India basis. The Banking Service Recruitment Boards issue advertisement in the leading newspapers inviting applications. The educational qualification is a graduate of a recognised University, age prescribed is 21 to 28 with usual relaxation to reserved categories. Candidates have to appear for a written test comprising objective as well as descriptive nature. In comparison the standard of the examination is higher than what is for the clerical posts and hence candidates will have to put maximum efforts to contest and become successful.

Candidates qualifying the written test are called for a group discussion/interview. Many candidates are unaware of the techniques on how to face an employment interview and hence it entails on their part to get acquainted with those techniques. The final selection depends upon marks obtained in both written test and group discussion/interview. The examination is held at various important towns in the country. The examination fee is Rs. 40/-. Candidates have to appear for written test at their cost, however, candidates called for interview are paid to and fro fares limited to second class rail fare.

On appointment as Management Trainee/Probationary Officer the selected candidates are put under training for a period of two years in the Junior Management scale of Rs. 1175-2675 (revised).

The initial emoluments are Rs. 1650 to 1800 approximately depending upon the place of posting.

There is a myth among candidates that positions in the Banking Industry are for those who come from the elite class. This myth was in vogue because earlier to their nationalisation, recruitment in the individual banks was done by choice method depriving candidates belonging to common fold. The myth is no more valid. With the nationalisation, all vacancies are brought within the reach of common people with a little urge, seriousness of purpose, initiative and right aptitude and service attitude. These candidates will not only get entry into it but are capable of making a mark so far as their individual careers are concerned and overall efficient working of the Banking Industry. Hence, candidates should shed off their diffidence and make preparation devotedly and seriously. Bright future awaits them.

Other Specialised Positions in the Banking Industry. In addition to the clerical and middle management personnel of the nature described above, there are other openings in various capacities to the already qualified and trained people. They are Agricultural Extension Officer, Technical Officer, Veterinary Officer, Chartered Accountant, Cost Accountant, Law Officer, Systems Officer, Personnel Officer, Hindi Officer etc. Obviously, qualifications prescribed for these posts are graduation or post-graduation in the respective fields. Experienced candidates have good prospects to enter into the service. The age limit prescribed for these posts is 21 to 45. The eligible candidates have to take a written test followed by an interview. The examination fee is Rs. 40/-.

Recruitment in Reserve Bank of India. Recruitment in the Reserve Bank of India is done by a specially constituted board namely Reserve Bank of India Services Board. The recruitment is done to the posts of Staff Officers Grade A & B, class 'II' posts of clerks, stenographers, coin-note examiners etc., with a slightly different pattern of examination, qualification, age-limit etc. Pay-scales are also different than that of the nationalised banks. However, usual concessions are available to the special types of applicants.

Recruitment in State Bank of India and its Associate Banks. Recruitment in State Bank of India is done through Central Recruitment Board and Zonal Recruitment Boards. The Central Recruitment Board recruits personnel of Officers' level whereas the Zonal Recruitment Boards are responsible for clerical posts. All other conditions remain the same as that of the Banking Service Recruitment Boards.

Other private banks and cooperative banks have similar arrangement for recruiting their staff.

Training Facilities. To obtain maximum benefit of a person's potentialities training plays an important role. Training in Banking

Industry is mostly in-service. It is offered through the following training institutions. Hostel facilities are provided.

Reserve Bank of India

- (1) Bankers' Training College, Bombay,
- (2) College of Agricultural Banking, Pune,
- (3) Reserve Bank Staff College, Madras.

Zonal Training Centres at Bombay, Calcutta, Madras and New Delhi impart training to clerical and non-clerical employees.

State Bank of India

- (1) Staff Training College, Hyderabad and Gurgaon,
- (2) The State Bank Institute of Rural Development, Hyderabad.
- (3) Staff Training Centres at various places.

All the nationalised banks have their own training colleges at various places to train officers and other staff.

Indian Institute of Bankers

It is at Bombay. It conducts Associate Membership Examination in two parts. It is open to all the serving bank employees. The membership is Rs. 25/- per year. The examination is generally held in May and October every year. It also holds a certificate examination which is for those who have passed the Associate Membership Examination and are serving at present in the banks. In addition, it conducts a Diploma in Bank Management which is open to serving bank employees and is open to its members only. The examination fee is Rs. 150/- only.

By passing these examinations, employees earn advance increments.

Candidates desirous of making entry into the Banking Industry should get fully acquainted with the facts mentioned in this chapter and should necessarily approach the original source for detailed information to avoid eleventh hour haste and miss chances

CHAPTER 3

CAREERS IN PROTECTIVE SERVICES

Internal security of citizens' life, property and valuables is as much needed as is the country's defence so as to allow the citizens to engage themselves in developmental activities of their Motherland in a freer and smoother way. The country's defence from foreign threat is taken care of by the nation's prestigious Defence Forces comprising the three wings of Army, Navy and Air Force. The internal security of the citizens is a job of various organisations. These varied organisations offer a protective coverage to the citizens and hence they are brought under a broad and common term as 'Protective Services'. These Protective Services are named after the type and form of duty they are expected to perform. These various organisations are described below with minimum but relevant details thereof.

Central Protective Services

(1) Border Security Force

This Force came into being in December, 1965. It is engaged in collection of strategic intelligence reports, protection of life and property in border areas, prevention of contraband deals and smuggling activities and possible infiltration of destructive elements. During wartime this organisation is entrusted with additional duty of protecting vital installations such as air fields, bridges, petrol depots, armament stores etc. It serves during this trying period as a supplementary reinforcement to the Defence Forces.

Occupational opportunities are open in its three important branches, namely, (a) General Duty Service (b) Medical Service; and (c) Technical Service including communication.

(a) *General Duty Service*: This branch deals with protection of borders against external aggression and infiltration. Recruitment to various posts is made through advertisement and on deputation basis from other similar organisation. The requirements for entering into the Force are given in the following table:

<i>Sl. No.</i>	<i>Post</i>	<i>Age</i>	<i>Physical Requirements</i>	<i>Educational qualifications</i>
1.	Constable	16-21	Ht. 170 cms Chest. 80-85 cms	Higher Secondary or equivalent
2.	Head Constable	do	do	do
3.	Asstt. Sub-Inspector	do	do	do
4.	Sub Inspector	18-23	Ht. 167 cms Chest. 81-86 cms	Intermediate or equivalent
5.	Inspector	do	do	do
6.	Assistant Commandant	19-24	Ht. 165 cms Chest. 81-86 cms	University Degree in second class

Promotions to the higher posts of Commandant/Assistant Director, Deputy Director, Joint Director, Joint Director General/Inspector-General, Director-General are available. Suitable pay-scales are prescribed for all these posts.

(b) *Medical Service.* This branch looks after health and general sanitation of the Force establishments. Recruitment to various posts is made through advertisements and on deputation basis. Following are the occupational opportunities in this branch: Compounder, Radiographer, Physiotherapist, Nurse, General Duty Officer Grade II and I, Senior Medical Officer. Requirements for various posts are the same as in other Central Government Establishments of similar nature.

(c) *Technical Including Communication Service:* This branch is mainly responsible for maintaining vehicles, buildings and communication installations i.e. wireless, telex system etc.

Details of recruitment to various posts are given on Page 16.

Other higher posts for promotion are Assistant Director/Commandant, Deputy Director/Deputy Inspector-General, Inspector-General with suitable pay scales.

(2) Central Reserve Police Force

This Force came into existence in 1939 to preserve law and order in the then princely states and was given a statutory status under CRP Act of 1949. The major responsibility of the Force is to maintain internal security and also assist sister organisations in emergency situations including relief operations and natural calamities.

The recruitment in the lower posts is done through advertisement/Employment Exchange. Educational qualification for a constable, Head Constable and Naik is pass in Middle School and for Jamadar and Subedar are Matriculation and intermediate respectively. Physical standard for all these posts is more or less the same as of BSF personnel of equivalent cadre. However, posts of Subedar are filled on promotion basis from amongst the Jamadars.

In the gazetted cadres recruitment is made through advertisement by holding a test in physical fitness, intelligence followed by an interview. Senior posts in the Force are filled on transfer/deputation from Defence Forces, sister organisations including State Forces. Educational qualification is a University degree in at least second class. The age prescribed is 19 to 25, Ht. 165 cms, Chest 81 to 85 cms and Wt. 50 Kg. Flat footed persons are not eligible. Various posts in the Force are Constable, Head Constable, Naik, Jamadar, Subedar in the non-gazetted ranks and in the gazetted ranks they are Company Commander/Quarter Master, Commandant, Deputy Inspector General, Inspector General and Director General with suitable grades.

<i>Sl. No.</i>	<i>Post</i>	<i>Physical Requirements</i>	<i>Educational qualifications</i>	<i>Mode of Recruitment</i>	<i>Age</i>
1.	Constable (Radio Mechanic, Operator)	Ht. 170 cms. Chest. 80-85 cms	Higher Secondary	Written test in PCM	18-23
2.	Assistant Sub-Inspector (Radio Mechanic/Operator)	Ht. 167 cms Chest. 80-85 cms	B. Sc. in PCM (II) or equivalent	do	do
3.	Sub-Inspector (Radio Mechanic/Operator)	do	do	do	do
4.	Inspector (Technical)	Nil	B. E. in Automobile/ Diploma in Automobile with Experience	On transfer/ deputation	18-25
5.	Assistant Commandant (Technical)	do	do	do	do
6.	Assistant Commandant (Architect)	do	B. E. (Architect) or equivalent	do	do
7.	Assistant Commandant (Communication)	do	B. E. (Tele-communication/ Radio Engineering (II))	do	do

(3) Railway Protection Force

This Force is constituted under RPF Act 1957. Main functions of the Force are to protect railway premises, trains and railway property and prevention of crimes on trains. They also assist operative staff of the Railway Administration. It has got four branches as Armed, Unarmed, Intelligence and Fire Service at railway zonal levels.

For recruitment in the non-gazetted posts educational qualifications and physical standards are the same as for equivalent posts in other forces. Occupational opportunities in the Force are Constable, Assistant Sub-Inspector, Sub Inspector, Inspector Grade I and II, Assistant Security Officer, Security Officer/Assistant Inspector General, Chief Security Officer/Deputy Inspector General, Inspector General in suitable pay scales. Recruitment in the Force is done through Railway Recruitment Boards and also on transfer/deputation basis.

(4) Central Industrial Security Force

There are many Central Industrial Undertakings whose protection and safe-guarding is entrusted to this Force under CISF Act, 1969. Recruitment to the posts of senior ranks is done on deputation basis from Defence Forces and State Police. Direct recruitment to the posts of Assistant Sub-Inspector, Sub-Inspector, Inspector and Assistant Commandant is also made. Terms of service, recruitment requirements are more or less the same as in other Forces. Occupational openings in the Force are Asstt. Sub-Inspector, Sub-Inspector, Company Commander/Inspector, Assistant Commandant, Assistant Inspector General, Commandant, Deputy Inspector General and Inspector General in appropriate pay-scales.

(5) Home Guards

This is an Auxiliary Force for maintaining internal security and help people in emergencies like air raids, fire, flood, earth-quake etc. Recruitment in the Force is open to all people including employees having high degree of physical fitness. Standards are the same as required for police force except age-limit which is 18 to 50 years. Employees are treated on special casual leave when under training or duty. There are no fixed scales of pay but certain amount of allowance is paid during training/duty period. Paid posts in the Force are of Platoon Commander, Company Commander, Junior Staff Officer/District Commandant, Senior Staff Officer/Divisional Commandant, Deputy Commandant General, Commandant General in suitable pay scales.

(6) Central Bureau of Investigation/Central Intelligence Bureau

Law breakers, criminals, miscreants, tax evaders and others create a nuisance to law abiding people and spoil social fabric. Information regarding underworld activities, therefore, has to be

collected, analysed and disseminated by a single coordinating agency. This is the work that has been bestowed upon the Central Bureau of Investigation which functions under the Ministry of Home Affairs. It also acts in collaboration with Interpol. Another organisation called Central Intelligence Bureau is set up to provide intelligence on matters of security of the country.

Recruitment to posts of Assistant Sub-Inspector, Sub-Inspector, Deputy Superintendent of Police and Public Prosecutor is done directly. Posts in higher ranks are filled on deputation basis from amongst officers of other organisations. All posts in the organisation require University degree. Pay scales are similar to posts in other like organisations.

(7) Central Excise and Customs

This Force functions under Department of Excise and Customs which levies duties on dutiable items, checks unauthorised production and smuggling of dutiable goods.

Occupational openings on the Custom side are Custom Sepoy (non-matriculation), Searcher (Matriculation), Preventive Officer (Intermediate), Examiner (Higher Secondary), Appraiser (Graduate). Some posts are filled directly and others by promotion. Class I posts are filled through IAS Examination.

Occupational openings on Excise side are Excise Constable (non-matriculation), Sub-Inspector (Matriculation, Age 18–21), Inspector (Intermediate, age 19–23 with height 167.5 cms, Chest 81–86 cms).

Other posts in both the wings are filled on promotion basis. They are of Superintendent of Central Excise, Assistant Collector, Deputy Collector, Collector. Recruitment is done through advertisement and on promotion.

II. State Protective Services

These services include Police, Prisons, Excise and Forest. Since these are under various State Governments there is a considerable variation in their recruitment methods, salaries, promotional avenues, physical standards etc. Candidates may seek information from advertisements of respective State Governments in this regard.

(1) Police

The posts in the State Police are Constable, Head Constable, Assistant Sub-Inspector, Sub-Inspector, Inspector, Superintendent of Police. The other posts in the Force are Wireless Operator, Radio Technician, Storeman (Technical), Supervisor (Operational), Supervisor (Technical) who are placed in suitable grades. There is a special arrangement in the cities having branches of Criminal Investigation Department, traffic wing, armed and unarmed, flying squad

having special designations. Officers in the Class I and II are selected on the basis of competitive examination conducted by Union Public Service Commission as also by State Public Service Commissions. The main function of the Force is to keep a watch on law and order situation.

(2) Prisons/Jail Department

Its functions are to provide care and custody of all prisoners, check work entrusted to prisoners, release time—expired convicts, maintain order and discipline among confined prisoners.

Occupational openings in the Department are Chief/Head Warder, Assistant Superintendent/Jailor Grade II, Jailor Grade I, Deputy Superintendent, Superintendent, Deputy Superintendent of Central Jail, Superintendent of Central Jail, Deputy Inspector General and Inspector General in appropriate pay scales.

(3) Excise and Customs

This department performs, more or less, the same functions as that of Central Excise and Customs. Occupational openings in the department are Excise Guard, Excise Inspector, Superintendent of Prohibition and Excise, Excise Circle Inspector, Assistant Prohibition Officer. Recruitment is done directly.

(4) Forestry Services

This department is responsible for development, protection, conservation and exploitation of forests. Recruitment to Forest Service is done through competitive examination conducted by Union Public Service Commission for higher posts and by State Public Service Commissions for middle order posts.

Occupational openings in the department are Forest Guard, Forester, Forest Ranger, Assistant Conservator of Forests, Deputy Conservator of Forests, Chief Conservator of Forest in appropriate scales.

III. Fire Service

This service is responsible for firefighting, recommending preventive measures of fire etc. Fire fighting units are maintained by State Governments, Local Bodies, Port Trusts, Air Ports, Public and Private Undertakings, Ministry of Defence etc.

Occupational openings in the Service are Fire Fighter, Sub-Officer, Station Officer, Assistant Divisional Officer, Divisional Officer, Deputy Chief Fire Officer, Chief Fire Officer in appropriate pay scales. Officers are trained in fire fighting at National Fire Service College, Nagpu. Recruitment in other cadres is made through Employment Exchanges.

In all these Services preference is given to outstanding sportsmen, ex-servicemen and candidates possessing N.C.C. Certificates. Candidates desirous of entering into these Services are advised to approach the original source for detailed information since all such information cannot be given in the chapter as also there may be changes set in the recent past.

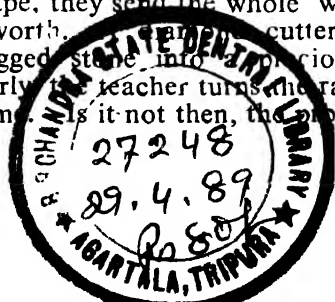
CHAPTER 4

CAREERS IN TEACHING

The noblest gift of the Nature to the mankind is the human being himself. This is so because in the animal universe, human being is the only animal capable of thinking coherently and with this super power, man tried to bring developments in his surroundings and made his life worth living. With the advances in times, man had tried to discipline his mind with certain aids devised by himself. Among the devices that have been used for advancement, education proved to be the only effective one. Crumbs of knowledge are collected through various means and media. Among such media teaching is one. Some Educational Psychologists have traced etymology of the word 'Education' as drawing out. The implied meaning of such an etymological exercise means bringing the best out of the human being for his good and for good of others. Therefore, it cannot be wrong to say that the Nature made the human being and the human being made the man. That is the man that we all of us are.

The human being that makes the other human being as man has been given a title as an educator or more precisely a teacher, who through his efforts of educating or teaching develops the crude form of a human being into man. That being the case, the teacher becomes the most revered one and the teaching profession noble.

The superiority of the teaching profession among the professions that are being followed by people for their survival, maintenance of living and advancing in it can be easily established. As we know, there are precious stones in the form of diamonds, rubies, emeralds, sapphires, opals, pearls and other objects of similar nature. These objects of ostensibility are discovered by man from under-neath the sea. So long as these objects lie at the bottom of the sea or covered underneath the Earth, these are worthless entities. But once these are brought on surface of the Earth and given a proper shape, they send the whole world stupefying about their glow and worth. A skilled cutter/polisher through his skills turns a rugged stone into a precious stone all to watch curiously. Similarly, a teacher turns the raw man into a perfect man worth his name. Is it not then, the profession of teaching a noble one?



All professionals like doctors, engineers, administrators, scientists and others including the teachers are created, hued and polished by the teachers, community—the proud product. It is certainly a rare experience and rewarding one to work among human beings rather than with inanimate objects as is the case in other professions. It is an unmatched satisfaction that the profession of teaching earns when it observes that it is able to contribute to the process of making man capable of facing the most difficult problems and mysteries of life, opening floodgates of knowledge, turning it again to his own use. From this, it will easily be ascertained the potential of a teacher and his profession. It is again a rare occasion to remain youthful since teachers work among the youth.

Perhaps, the largest profession which offers employment opportunities to young people in plenty is the teaching profession only. Out of 22 million people that are employed in the organised sector 3-4 million are employed in the field of education which is approximately 16%. Employment in the profession certainly could have been more had all the children of school going age were in schools, at least those upto the age group of 14 who are to be educated compulsorily as per the directive principle enshrined in our constitution. Notwithstanding this, emphasis given on the new educational policy recently declared displays definite indices of employment opportunities in the field of education on a larger scale.

A single profession which provides employment opportunities to female candidates more in number is the teaching profession only. Nearly one fourth of today's teaching community is comprised of female teachers. With the spread of education which eliminates intimidating superstitions there will be a wide scope for female teachers in the foreseeable future.

For reasons unknown this noble profession of teaching of our glorious past had undergone a traumatic time and hence lost its grace during the dark days of foreign rule. Although it cannot be said with certainty about the diminishing devotion towards the profession among the present teachers lot, it is equally impossible to find teachers of the calibre of Dronacharya or Sandipani, yet this is not confined to this profession only but it has affected all the professions because of material outlook changed with the changing times. With the increasing trend to better working conditions this teaching profession is again attracting people towards it. Indeed a welcome change? Alongwith the enhancement of pay-scales certain other incentives, concessions and exemptions have been granted to the teachers so as to relieve them of the anxiety and devote themselves to the profession truly. National loan scholarships to children of school teachers, national fellowships, teacher fellowships, travel grants, career awards, national and state awards for teachers, national foundation for teachers' welfare form some of the incentives for teachers.

The profession of teaching dipped to its lowest ebb at one stage. It almost became a proverb to mean that if anybody was not even capable of begging he could go for teaching. Young people rejected for other jobs turned to this profession out of duress as a means of earning livelihood. Circumstances are gradually changing. Yet the profession is still not out of woods, perhaps, because of unemployment. However, the incentives just mentioned above attract the talent to this profession.

Employing Institutions. Teachers are employed in a variety of institutions depending upon the courses taught. However, these are all called educational institutions further classified as schools, colleges, institutes, universities, advanced centres etc. If further divided we get kindergarten, nursery, primary, middle, high, senior higher secondary schools. Colleges can be classified into Polytechnics, Engineering Colleges, Medical Colleges; Institutes of Technology, art and crafts colleges etc. A variety of teachers works in these educational institutions with different designations as pre-primary school teachers, primary school teachers, Trained Graduate Teachers, Post Graduate Teachers, Principals, Physical Training Instructors/Physical Education Teachers, Drawing/Art Teachers, Dance/Music Teachers, Language Teachers, Craft Instructors, Commercial and Secretarial Instructors, Home Science Teachers, Teachers for the Physically Handicapped, Teachers for the Blind, Teachers for the Deaf and Dumb, Teachers for the Mentally Retarded, Career Masters, School Counsellors, University Teachers--Lecturer, Reader, Professor, Assistant Professor, Demonstrator, Principal, Head of the Department, Dean, Rector, Associate Professor, Director etc.

Nature of Work. Although it may be too simplistic to describe duties of a teacher yet when questioned anybody can very readily answer that teachers teach students. It is true but besides teaching teachers have to undertake many more other activities. Normally a teacher performs duties like allotting, collecting and checking home work of students, conducts and demonstrates experiments, evaluates periodic performance of students through tests, conducts annual examination, evaluates answer sheets and helps in declaring final results, besides his main teaching activity. He also guide students about their academic, social and personal problems in groups or on individual basis.

There are special functions attached to a particular category of teachers. In kindergarten nursery schools stress is on to develop good manners and etiquettes which become a corner stone of the future citizens of the country. Such personal attention is needed because of the tender age of the students in such schools. These teachers are expected to assume responsibility to encourage students for constructive/creative activities, simple health habits, offer opportunities to develop latent capabilities through organising extra-curricular activities and intramurals such as sports meets, hobby clubs, dramatics, science clubs, debating competitions and

many more other activities. The habits that have been formed early in age get consolidated in the tender minds which become useful in leading a meaningful life in future. Looking to this important aspect it is the onerous and responsible task that the teachers are to perform. They truly prepare the future citizens of the country. That is why teachers' profession becomes pious and noble.

Personal Qualities Required for Teachers. There are certain pre-requisites to become a teacher. A primary trait quite in demand for teacher's profession is to have teaching ability. Along-with comes language fluency. Since, a teacher deals with students of various levels of intelligence, he himself should have above-average intelligence. He must have a liking for studies and learning new things and techniques. To be an ideal to young generation, the teacher should be self-disciplined and should have high moral standards. He should be emotionally stable to develop good temperament, understand complicated problems of students and appreciate them. A sense of humour and fair-play, adaptability etc., are the assets of a teacher. However, alongwith all these qualities the teacher must have a thorough knowledge of his subject that he teaches to students.

Training. No doubt, success in the teaching profession depends very much on personal qualities of a teacher. However, if these qualities are to be utilised to their fullest import, training in teaching becomes absolutely essential. Trained teachers use a variety of audio-visual methods and techniques to educate their students in quickest and soundest possible manner. All teachers except university teachers are trained in teachers' training colleges and courses in teaching are of different duration. Diploma in Education is of two years duration which trains teachers to teach at Primary Education level. Bachelor of Education is a course of one year duration which prepares teachers to teach in secondary schools. Teachers having B.Ed. degree after graduation are called Trained Graduate Teachers and after Post-Graduation are called Post-Graduate Teachers. All these teachers are trained in teachers' training colleges. All Universities have teachers' training colleges. There are separate institutions for special types of teachers such as teachers for the deaf and dumb, teachers for the blind and mentally retarded students, craft teachers, music teachers and the like. Post-graduate teaching courses are also available in M.Ed. degree. Some of the Universities offer these courses through correspondence so as to enable those untrained teachers to get trained. There are vacation courses also for the purpose. It is better to get trained first. There are Regional Colleges of Education which offer basic degree courses in teaching for full four years after high secondary.

Pay Scales. The following are the pay scales of teachers of different categories. Pay-scales of teachers in schools shown in the table are applicable to teachers in Delhi.

TABLE INDICATING SCALES OF TEACHERS

Sl. No.	Category of Teachers	Pay-Scales
1.	<i>Primary School</i>	
	(i) Head Master: Ordinary	1400-40-1800EB-50-2300
	Selection Grade (for 20% of posts)	1600-50-2300EB-60-2660
	(ii) Assistant Teacher: Ordinary	1320-30-1560EB-40-2040
	Selection Grade (for 20% of posts)	1400-40-1600-50-2300EB-60-2600
2.	<i>Middle School</i>	
	(i) Head Master: Ordinary	1640-60-2600EB-75-2900
	Selection Grade (for 20% of posts)	2000-60-2300EB-75-3200-100-3500
	(ii) Assistant Teacher: Ordinary	1400-40-1600 50-2300EB-60-2600
	Selection Grade (for 20% of posts)	1640-60-2600EB-75-2900
3.	<i>Higher/Senior Secondary Schools</i>	
	(i) Principal (Secondary School)	2000-60-2300EB-75-3200-100-3500
	(ii) Principal (Higher Secondary School)	3000-100-3500-125-4500
	(iii) Post-Graduate Teacher: Ordinary	1600-60-2600EB-75-2900
	Selection Grade (for 20% of posts)	2000-60-2300EB-75-3200-100-3500
	(iv) Trained Graduate Teacher: Ordinary	1400-40-1600-50-2300EB-60-2600
	Selection Grade (for 20% of posts)	1640-60-2600EB-75-2900
4.	<i>University/College</i>	
	Professor/Principal	4500-150-5700
	Reader	3000-100-3500-125-5000
	Lecturer	2200-75-2800EB-100-4000

In other states these scales are more or less on this pattern. Scales of University Teachers are applicable to all the teachers in the Universities and other higher institutes of learning.

Teaching is the only profession in which a confluence of three important things is seen. It is through this profession mental, physical and social development of a child is achieved. Schools and colleges through their efforts bring out such citizens who contribute their mite for the alround development and progress of the country. Will it not, therefore, be quite an honourable a job to become a teacher?

CHAPTER 5

CAREERS IN ADVERTISING

Appropriate use of words, phonetic intonations, attractive picturization and beautiful colour effect are the four major tools through which advertising of a product, business or service can be developed into an art enough to capture customers. Radio announcements, T.V. presentations, newspaper printing, hoardings at important places of a town, catchy slogans and write-ups, posters, corner meetings, acting are some of the media through which advertising becomes an art. This field of advertising has enough potential of employment for young people provided they possess appropriate training, skill (aptitude, interest and personality dispositions) and experience. Sure then, young people must consider careers in the field to enter into and start preparing at proper age.

The main function of this art of advertising does is to appeal to the sense of man who, because of an appeal, will think for considering the product advertised and ultimately try to possess it not much bothering about other aspects of it. Behind all marketing skills, in addition to quality, refinement, durability of the product, advertising art works imaginatively. People in this art of advertising work round the clock tirelessly innovatively and with ingenuity and make it increasingly communicative. That is why it is said that the art of advertising talks and talks effectively.

New products service or business do not acquire firmness automatically in the market because of stiff competition. To establish them in the market the art of advertising is used by manufacturers to arouse awareness and interest among buyers and customers and make them impetuous and compulsive to buy such products. Some-times an advertisement of a product is so appealing that fickle-minded customers drag themselves into a net, are deceived and later become stunned of their action in going for a sub-standard costly and rough article. This leads us to conclude that this art of advertising may reveal two aspects i.e. bad or good effects. Irrespective of it, it firmly establishes the usefulness of the art and hence this has earned for it a name as a profession. Who are these persons who make customers impulsive? The rhetoric is the people who work in the field of advertising. For talented young people of both the sexes there are rewarding career opportunities in the field.

Qualities Required for the Profession. To make good advances in the career of advertising there are certain personal qualities. Not that these qualities should be inborn but they can be achieved with a little bit of effort. Alongwith the natural endowment of aptitude for the art which may be linguistic (word fluency), an eye for beauty. A person desirous of adopting this field as a career must also possess qualities like imagination, visualization, curiosity, enthusiasm and ability to effectively communicate and analyse problems. There always is an upheaval in the market and certain product advertised earlier may lose its grace over a period of time which requires readvertising. This quality of imagination becomes apparently important to make that article again saleable. Likewise other qualities also become useful to remarket it.

Training Facilities:. A person searching for a career in advertising must invariably undergo specialised training. Since advertising has been developed into a profession there are various departments of it in which specially trained people are recruited. There are diploma/degree courses for graduates in Advertising, Journalism, Mass Communication, Marketing and Sales Management, Business Management, Photography etc. Some of the Institutes which offer such courses are given below:

1. Indian Institute of Mass Communication, D-13, South Extension, Part II, New Delhi-110049.
2. Rajendra Prasad Institute of Communication and Management, Kulpati K.M. Munshi Marg, Bombay-400007.
3. Bhavan's P.D.N. College of Communications and Management, Bombay-400007
4. Bhavan's Sardar Patel College of Communication and Management, Mehta Sadan, K.G. Marg New Delhi-110001.
5. Bhavan's College of Communication and Management at Ahmadabad, Madras, Cochin, Guntur, Hyderabad, Mangalore, Baroda, Chandigarh, Trichur, Bombay, Jaipur, Kakinada, Nagpur, Calcutta, Vishakhapatnam. (Get the proper name of the institute and correct address).
6. School of Business Management, Gogte College Campus, Belgaum-590006.
7. School of Business Management, Bijapur.
8. Andhra Pradesh Productivity Council, Vijaywada-520010.
9. The Centre for Advanced Studies & Research in Economics & Commerce, 638/13, New Adarsh Nagar Colony, Garha Road, Jabalpur-482002.
10. School of Business Management, Gadag-582101.
11. Padma Bhushan Shri S.N. Ramaswami Ayyar Institute of Career Courses, Tiruchirapalli.

12. Indian Institute of Management at Ahmedabad, Bangalore, Calcutta and Jamshedpur.

There are also university courses in some of the universities. All the institutes hold a common competitive examination respectively to give admission to graduates of any discipline holding it preferably in second class. This test assesses candidates in their ability in verbal reasoning, quantitative reasoning, data interpretation, mathematical comprehension and knowledge of English and comprehension. Final selection is based on candidates academic distinction, work experience, performance in the test, group discussion and personal interview.

A well established advertising agency has many departments each of which performs special kinds of functions. On such functions the organizational set-up of an agency may be divided into departments mentioned below.

1. Accounts Management and Client Servicing Department. Accounts Director, Accounts Executive, Accounts Assistant are few occupational opportunities in this department whose functions involve preparing salary bills, bills of clients and proper maintenance of accounts disbursement of payment and release of service charges from clients etc.

2. Copy Department. A person quite imaginative and having flair for writing and possessing a very good command on language, practical knowledge of human Psychology has a good opportunity to get employment in this department and prosper in it. He passes messages of clients to masses—the consumers in an effective and persuasive way. This department is a fountain head of generating new ideas in words and concepts on selling products/services. It prepares text of an advertisement, coins slogans, gives apt captions for popularising products/services. Verbal skills, imagination to understand salient features of products and their use are required. It transforms a concept into a selling message that will appeal to customers. Career opportunities are Chief Copy Writer, Junior Copy Writer, Senior Copy Writer, Copy Writer. They are paid good salaries depending upon merit, length of service and experience alongwith other perks.

There are Script Writers who write for television, radio or cinema—the audio-visual media which require them to think in terms of sound and vision rather than solely depending upon written words. They are required to possess sound knowledge of techniques of making films and video tapes. These people brief the production staff i.e. Producer, Director, Cartoonist; Animator. A Script Writer must be able to write in concise form effectively.

3. Art Studio/Art Department. Persons employed in this department are called Art Director, Chief Visualiser, Dy. Chief Visualiser, a number of Senior and Junior Artists and Visualisers. The main function they do is to prepare visuals, layouts for press

advertisements, posters, calendars, illustrations, booklets etc. They study specifications and work out estimated cost. Some of them specialise in art work, effective lettering, story illustrations, visualizations etc. Other employees in the studio are Commercial Artists, Tracers who prepare enlarged copies of maps, layouts, plans etc., with the help of blue prints, ammonia prints, ferro prints, screen prints etc. Photographers are also employed in such studios.

4. Media Department. To reach masses there are different media—all combinedly called mass media. They can be named as radio, T.V., newspaper, magazine, year book, directories, contractors of hoarding sites, transport undertakings, railways, municipal boards, corporations, organizers of trade fairs/exhibitions etc. With the knowledge of potential of each of these media a person working in the media department selects out an appropriate media for advertisement to carry a message of a particular product. These people are called Sales Manager or Sales Promotion Manager. The media head is often referred to as Space Buyer or Time Buyer who is capable of determining which advertising media would be most effective. Commercial advertisements are of short duration on audio-visual or only audio media and a person working in it is called Time Buyer. For newspaper advertisement he is called Space Buyer since he is to carry the message in smallest space. Technical Assistant, Assistant Media Executive, Dy. Director (Advertising) are some of the occupational opportunities placed in appropriate grades. In some departments they may be called as Media Assistant, Media Executive and Media Manager.

5. Production Department. Two types of work is involved in this department i.e. printed publicity and outdoor publicity. These people look to quality of material produced in printed media like newspapers, magazines, posters and folders, brochures, calendars, diaries, annual reports, catalogues and bulletins. The personnel in the department should have knowledge of printing, engraving and typography. Production Assistant, Production Executive, Production Manager are some of the openings in the department.

6. Market Research Development. Novelty is a basic characteristic of human desire. Demand of new and fresh products depends upon this novelty which churns out market stock of products. Articles of yesteryears become obsolete giving place to new ones. One should have to study the human mind for stepping up sales of particular articles and apprise of the results of the study to the manufacturers so as to enable them to think of new articles befitting the demand. A band of workers is involved in studying the market demand. These people work in the Market Research Department. They are continuously involved to find out all sorts of general preferences, attitudes, tastes, styles of the public mind. This market research provides basic data to manufacturers for planning a new product. Colour preference, packaging devices, attractive shapes, utility, durability, minimum use of allied sources for lessening the cost of articles, presentation and such other factors

are studied minutely in this department. On the basis of the conclusions drawn, these are fed to the customers through the advertising media. Persons engrossed in market research can be named as Director of Market Research, Senior and Junior Research Officers and Research Assistants, Investigators, etc.

7. Management. So far as a small advertising agency is concerned its proprietor has multi-dimensional duties to perform. However, in big advertising agencies General Manager supervises work of its staff. He is assisted by heads of various departments, Regional or Zonal Managers with their supporting and secretarial staff.

8. Employment. The biggest employer of the personnel working in the advertising field is the Govts. in their publicity departments. Central Govt. has its full Ministry—Ministry of Information and Broadcasting which has Directorate of Audio-Visual Publicity. This department again is divided into two *i.e.* Doordarshan and Radio. People are aware that there was a spurt in setting up Doordarshan Kendras and at the moment there are more than 185 such Kendras. At the rate of expansion of this department, it can safely be concluded that employment of advertising staff has good prospects. Likewise every State employs these people in their respective departments. There are Central as well as State public sector undertaking having their independent publicity divisions which offer employment opportunities. Excellent opportunities are also there in the private sector establishments which bring out consumer goods. Recruitment in the Govt. sector is done through the medium of Employment Exchanges with regard to non-gazetted posts as also through Staff Selection Commission and UPSC or State Public Service Commissions that of gazetted ranks. Private sector employers select their own media for recruiting their staff.

Besides paid employment in the organizations mentioned above, there are opportunities of self-employment also. A little bit of initiative and knowledge of one of the publicity media will help setting up an independent advertising agency. An added advantage of such self-employment is that the entrepreneur can create more job opportunities for others too. Film industry, manufacturers of consumer goods if contacted will promote self-employment in this field. In this way you can solve your own problem of employment and that of other unemployed people also.

CHAPTER 6

CAREERS IN PSYCHOLOGY

Biological or life sciences help people in their physical growth and protect them from diseases. However, growth, maintenance and protection of physical health is not the sole thing that people want for leading a meaningful life. They need to develop their mental health also alongwith physical health. Although it cannot be claimed that a particular science may bring about mental health of human being yet important among the sciences that make it possible, Psychology perhaps, should be considered to be the foremost for the purpose.

Man's behaviour is rather unpredictable. We cannot claim that given certain circumstances and conditions all men will behave in a set fashion. It is because human mind thinks and thinks in different ways. It is this thinking power which causes a variety of behavioural patterns. A study of these behavioural patterns can be possible through the subject of Psychology and hence this subject is defined as the science of behavioural patterns.

Every person is a separate entity in view of differences which are called individual differences which may be in their physical built-up, race, culture, social stratification, colour, language, psychological bearing like aptitude, interests, personality dispositions, intelligence, emotional patterns, urges, drives impulses, environments and many more. However, howsoever may be differences that separate one individual from other it is possible to govern individual behaviour, if not in a set pattern but to some extent on an agreeable pattern. Through the process of psychological treatment human mind can be shaped, mental health of people can be developed. Therefore, Psychology has unquestionable importance for individual's development as also that of society.

A few years earlier, the subject of Psychology was studied in academic interest but now it has come out of its shell and through intensive experimentation it is now being transformed into a pragmatic science as other sciences for man's use. Viewed through this angle, Psychology has grown now into a profession through which people learn about developing better ways of mutual adjustment and has an unparallel importance in educational process. Over the years the subject has been split into its various branches or discip-

lines as Personnel Psychology, Educational Psychology, Social Psychology, Counselling Psychology, Individual Psychology, Engineering Psychology, Consumer Psychology, Clinical Psychology, Comparative Psychology, Experimental Psychology and Child Psychology.

It will therefore be of sterling interest to know about all these forms of Psychology because they open up exceptional opportunities for young people to enter into and form an interesting field to probe and read human mind. It is through human mind human beings are treated for their advancement.

1. Personnel Psychology. One of the important tasks performed by the Personnel Psychology is to select personnel and their classification. In various industries the methods of personnel selection are used not only for selecting new employees but for their promotion, transfers, training also. These personnel techniques are of prime importance for selecting suitable students for admission to medical, professional and technical courses.

2. Educational Psychology. It deals with fundamental principles of human behaviour and their application to education. There are problems of adjustment, growth, development of children and adjustment, their mental, physical, emotional, personal and social development of attitudes, interests and values which bring influence on the process of education. It also studies individual differences and their meaning for education.

3. Social Psychology. It studies social behaviour of man, socialization of children *i.e.* development of intelligence, acquisition of morality, personality and society, group dynamics, collective behaviour and mob psychology.

4. Counselling Psychology. This branch of psychology deals with persons having certain emotional problems or those who want help in taking decisions on future occupational careers with adequate preparation in basic education and adequate professional training. A counsellor holds a personal dialogue in which by means of his relationship and special competencies he provides a learning situation in which a counsellee—a normal sort of person—is helped to know himself and his possible future situations so as to make use of his potentials and characteristics in a way that is satisfying to him and beneficial to society and further makes him learn how to solve future problems and meet future needs. Hence, counselling has multiple adjectives such as vocational, educational, marriage etc.

Guidance workers create an awareness among the youth about planning their future—obviously occupational career through well-formulated programme—may be in schools, employment exchanges, manpower offices, bureaux of psychology or vocational guidance.

5. Industrial Psychology. It directs its attention to human factors such as mental struggle, irritation, annoyance, anxiety for

bringing more output in production of a company and simultaneously bringing happiness to the individual employee. It devises new methods and techniques looking to individual needs so as to give mental relaxation to him and increasing his work efficiency. It tries to bridge the gap between workers and management by undertaking research on fatigue, emotional response, learning, adaptation and environmental factors which are manipulated for extracting optimum human performance resulting into high industrial output.

6. Engineering Psychology. It relates to designing of consumer goods. These people collaborate with engineering professionals in designing equipments facilitating smooth performance of employee.

7. Consumer Psychology. This branch of psychology deals with behaviour of a consumer. It uses advertising and selling as media with an objective of effective communication from manufacturers to consumers. These people conduct surveys to study consumer needs and advise manufacturers to bring such products in the market suiting those needs. Other media of advertising are used to influence public opinion in favour of a certain product.

8. Clinical Psychology. It is concerned mainly with disorders of mind, emotion and behaviour. People in this subject work on problems of sensation and perception, study effects of drugs and narcotics on behaviour, evaluate intelligence and personality. They try to understand basic cause of mental illness through case history of patients, various psychological testing techniques besides medical examination.

9. Experimental Psychology. It is to study psychological problems such as sensational perception, learning and memory, motivation and physiology.

10. Child Psychology. It is concerned with mental growth and development of a child. It makes study of psychological, social, biological and environmental factors that cause growth of a child.

Psychological knowledge is also being used in crime detection, lie detection etc. It also tries to know causes of anti-social behaviour by studying characteristics of delinquents and criminals. Some psychologists try to reform criminals through changing their attitudes and habits.

Institutes Offering Courses in Psychology

<i>Sl. No.</i>	<i>Institute</i>	<i>Type of Course</i>	<i>Duration</i>	<i>Admission Qualification</i>
1.	The Central Institute of Psychology, Ranchi, Bihar	Diploma in Psychological Medicine	2 Years	M.B.B.S., Psychiatric experience in a mental or general hospital is an additional qualification
		Diploma in Medical and Social Psychology	2 Years	Master's Degree in Psychology
		Diploma in Psychiatric Social Work	2 Years	Post-Graduate in Psychology or Sociology or Anthropology (with specialization in Cultural/Social Anthropology)
2.	The National Institute of Mental Health and Neuro-Sciences, Bangalore	Ph.D. in Clinical Psychology	3 Years	First class Post-Graduate in Psychology or Diploma in Medical and Social Psychology
		Diploma in Medical and Social Psychology	2 Years	M.A. (Psychology) with Experimental Psychology as one of the papers
3.	Deptt. of Educational Psychology and Foundation of Education (NCERT), National Institute of Education, New Delhi	P.G. Diploma in Vocational Guidance	9 Months	Master's Degree in Psychology or Education

4.	Bureau of Educational and Psychological Research, Calcutta	(i) Full-time Career Course (ii) Part-time Career Course	Master's Master's	1 Year 3 Years	M. A. in Psychology and serving as a teacher
5.	Bureau of Psychology, Allahabad	Diploma in Vocational Guidance	Guidance	1 Year	P. G. Degree in Psychology or Education
6.	Institute of Vocational Guidance & Selection, Bombay	(i) Diploma in Vocational Guidance (ii) Career Master's Training		1 Year 2/3 Months	B. Ed. + Career Master's Certificate Must be a teacher
7.	Deptt. of Psychology, University of Calcutta, Calcutta	Certificate in Applied Psychology		1 Year	Graduate/P. G. in Psychology/Anthropology/Medical Graduate
8.	Tata Institute of Social Sciences (Psychology Section) Deonar, Bombay	(i) Certificate in Applied Psychology (ii) Diploma in Social Service Administration		1 Year 2 Years	P. G. in Psychology/Anthropology/Physiology/Sociology
9.	Indian Institute of Science, Bangalore	Ph. D.		Depends upon completion of research	P. G. in Psychology or other allied subjects with 50% marks
10.	Directorate of Psychological Research, Research and Development Organization, Ministry of Defence, W. Block, R.K. Puram, New Delhi	Arranges training programmes for defence personnel only on areas of psychology. It develops tests and conducts research in selection methods i.e. interview techniques, group testing techniques, psychological testing for selection and placement of officers and other ranks			

<i>Sl. No.</i>	<i>Institute</i>	<i>Type of course</i>	<i>Duration</i>	<i>Admission Qualification</i>
11.	Naval Psychological Research Unit, Cochin	It constructs and standardises tests of numerical ability, auditory, substitution, immediate memory, mechanical aptitude and radar plotting for use in selection and allocation of sailors to different trades. It also contributes in development of Instructor Performance Raters used for selection of instructors for Naval Training Institutions.		
12.	Training Division Under the Directorate of Psychological Research (of Serial No. 10)	(1) Interviewing Officers Course	4 (Weeks) (Theory) 6 (Weeks) (Practical)	Lt. Col and Colonel only are eligible
		(2) Group Testing Officers Course	3 Weeks (Theory) 8 Weeks (Practical)	Majors or equivalent ranks of Defence Forces
		(3) Psychologists / Technical Officers Course	12 Weeks	Civilian Psychologists & Technical Officers (Majors or equivalent) with M.A. (Psychology)
		(4) Personnel Selection/Recruiting Officers Course	3 Weeks	Recruiting Officers of the Defence Forces

		(5) JCO/CPO/Sergeant Testers, Course		3 Weeks	JCOs or equivalent officers of the Defence Forces
13.	Meerut University, Meerut (UP), Delhi University, Delhi, Rajasthan University, Jaipur	M. Phil		1 Year	Second class M. A. in Psychology
14.	Deptt. of Psychology, Aligarh Muslim University, Aligarh	P. G. Diploma in Psychology		1 Year	M. A. in Psychology
15.	Indian Institut of Technology, Kharapur (WB)	P. G. Diploma in Industrial Psychology and Industrial Relations		1 Year	M. A. in Psychology
16.	University of Gujarat, Ahmedabad, Gujarat	P. G. Diploma in Medical and Social Psychology		2 Years	M. A. in Psychology
17.	University of Madras, Madras: and Department of Education, Punjab University, Chandigarh	P. G. Diploma in Counselling and Guidance		1 Year	M. A. in Psychology
18.	University of Madras, Madras	(i) Diploma in Applied Psychology (Part-Time) (ii) Diploma in Guidance and Counselling		(i) 1 Year (ii) 1 Years	(i) Graduate with Psychology (ii) M.A. in Psychology
19.	Institute of Vocational Guidance, Govt. of Gujarat, Ahmedabad, Gujarat State Bureau of Education & Vocational Guidance, State Institute of Education, Delhi	Career Master's Training		2/3 months	Teachers in schools.

Employment. Professionally trained personnel find employment in various positions of the following nature. Professor, Reader, Lecturer, Research Associate, Senior Research Fellow, Junior Research Fellow, Senior Scientific Officer Grade I & II, Training Officer, Labour Officer, Industrial Inspector, Psychologist, Employment Officer, Vocational Guidance Officer, Technical Assistant, Scientist, Post-Graduate Teacher, Educational and Vocational Counsellor, Psychiatric Social Worker, Rehabilitation Officer, Personnel Welfare Officer, Child Welfare Officer, Research Officer, Industrial Social Worker, Career Master, Personnel Relations Officer, Industrial Psychologist, Industrial Relations Officer, Personnel Assistant etc.

The employers of these personnel are schools, colleges and training institutes and universities, hospitals, State Directorate of Employment, State Institutes of Education, National Council of Educational Research and Training, Bureaux of Psychology, Directorate General of Employment and Training and a vast number of industrial units under Public and Private Sectors who employ more than 500 employees, Directorate of Psychological Research of Defence Forces and other establishments. There is also a scope for self-employment opportunities of opening child guidance clinics, adolescent and guidance/therapy centres, experimental laboratories, clinics for mentally retarded and handicapped, setting up of vocational guidance and counselling units etc.

Recruitment to the gazetted posts under the Government is done through Union Public Service Commission or respective State Public Service Commissions, Employment Exchanges and advertising posts in leading newspapers. Private Sector establishments have their own methods of selection. Professionally trained persons in the field should look out for advertisements in national dailies and Employment News—a weekly of the Directorate of Advertising and Visual Publicity.

CHAPTER 7

CAREERS IN HISTORY

The subject of history has always remained a great source of inspiration to people because historical knowledge provides a deep insight into its current happenings, interests, concerns, its numerous problems and deficiencies, its dynamics and depths. The knowledge of our intellectual antecedents brings to light important research leads and hypotheses, it enhances our discrimination of current important contributions. One of the foremost factors in studying history is that it makes us aware of continuity with the past. In all historical knowledge lends added significance and effectiveness to our daily efforts. Man marches in future on the stock of knowledge of happenings that took place in the past. Our horizon of knowledge widens which helps to avoid those things that led us on to the wrong path and covet those which brought us glory and honour.

History, in fact, means record of events. However, one should not look at them as bare facts turning them as prosaic matter. History can be equated to a bomb as far as its latent power is concerned. It helps in interpreting our traditions and talents of the people of earlier civilizations or pre-civilization era. It helps other disciplines like philosophy, economics, political science, language and physical sciences to develop. The mention of mere names of Rana Pratap Singh, Chhatrapati Shivaji, Rani Laxmibai, Kautilya, Ashok the Great, Gautam Buddha and others sends a thrilling sensation among the present generation and makes them ever ready to commit any kind of sacrifice for protection of their Motherland. Viewed from this angle historians are the custodians of our historical, cultural, economic, social heritage and provide us necessary fillip to keep historical events alive. Specialists in history enlighten us of our archaeological past, evolution of mankind through the study of anthropology, things and objects preserved in museums enable us to view the past and help us plan strategies of warfare through military science. The knowledge of history provides us enough impetus for identification, preservation, documentation and cataloguing of historical data systematically. Because of this historians are aptly described as the custodians of the past events.

Education and Training. In every school, history is taught upto 10th Class. Thereafter it becomes an optional subject for 10+2 and at college level education. As in other subjects one can do graduation, post-graduation and doctorate in History. This facility is available in almost all the Indian universities.

Special degree courses in the following subjects are also available in many universities—Ancient History and Culture, Archaeology, Ancient India and Asian Studies, History of Civilization, Modern and Medieval History, Islamic History, Islamic Studies, Museology, Western History. All these degree or post-graduate degree holders cannot be said to have specialised training and hence they are not called professionals in the true sense. They can take up employment in other fields as is the case with other graduates and post-graduates. Teaching, various services under the Govt. offer employment to these degree holders where they cannot use their knowledge in discharge of their duties because the nature of work they are assigned to do does not call for that knowledge. It may be possible that after securing such a job they have nothing to do with the knowledge of history and might forget that they had studied history ever in life.

There are specialised courses conducted by some organisations. Details are provided on page 41.

Note—Practical training for correspondence course is arranged at Andhra Pradesh State Archives, Hyderabad; Orissa State Archives, Bhubaneshwar; Rajasthan State Archives, Bikaner; and U.P. State Archives, Lucknow.

Other diploma courses/certificate courses in Museology, Archaeology, history are available in the Universities like University of Allahabad; Banaras Hindu University, Varanasi; University of Madras; Kamaraj University, Madurai; Karnatak University, Dharwad; Aligarh Muslim University, Aligarh; Maharaja Sayajirao University, Baroda; Calcutta University, Calcutta; and Prachya Niketen—Centre of Advanced Studies in Indology and Museology, Bhopal. Since educational qualifications and duration of the course differ from University to University, aspirants may get in touch with them.

Employment. As usual employment opportunities lie considerably in schools and colleges as Trained Graduate Teachers, Post Graduate Teachers, Lecturers, Readers and Professors besides other openings in Central and State Services on competitive basis.

Employment in specialised fields is available in the following institutions/establishments.

1. Archaeological Survey of India. It is responsible for exploration and excavation of ancient sites, maintenance and preservation of ancient monuments of national importance, study of epigraphs and coins, exhibition and preservation of ancient relics in museums etc. It has ten circles all over india having ten separate specialised

<i>Name of the Organization</i>	<i>Course Taught</i>	<i>Duration</i>	<i>Entrance Qualifications</i>
School of Archaeology, Post-graduate Archaeological Survey of India, Archaeology Janpath, New Delhi	Diploma in	1 Year	Second class Master's degree in Ancient History or Medieval Indian History or Archaeology, Geology, Anthropology.
National Archives of India	Diploma Course in Archives Keeping	1 Year	Second class Master's degree in History with an optional paper in Modern Indian History Post 1600 period.
	Correspondence Course in the Science of Archives Keeping	1 Year	Graduate in Arts or Science

branches like excavation, prehistory, epigraphs, archaeological gardens, museums, temples and other places of worship.

2. National Archives of India. A band of devoted workers is needed to look after historical material and preserve it for reference purposes in future. This is the job of the National Archives of India. It has branches at Bhopal and Jaipur.

3. Indian Council of Historical Research, New Delhi.

4. Ministry of Transport and some registered travel agencies appoint tourist guides.

5. Cultural Affairs Division of Ministry of External Affairs.

6. Ministry of Defence.

7. Central Board of Film Censors.

8. All India Handicraft Board.

9. Ministry of Education.

10. Department of Tourism.

11. National Museum and other museums.

For some of the posts knowledge of a foreign language is considered necessary along with the knowledge of history.

It would be interesting to know the type of work performed by some specialists in history:

1. Archaeologist. He studies ancient art, architectural relics, monuments, excavations and other materials to determine social habits, customs, religious practices, living conditions etc. as existed in the past and their influence on modern civilization. He visits places of antiquity to study monuments, relics and other materials that were in use in early times, examines and analyses findings to determine period to which they belong, conducts exploration, survey and systematic excavation work of ancient sites to discover hidden cities, structures and other antiquities. He collects objects of art, pottery, beads, ornaments and other relics from excavation bearing pre-historic or post-historic culture, classifies them according to period to which they belong. He undertakes research on findings and publishes reports on historical importance. He also inspects and preserves ancient monuments like Temples, Forts, Mosques in good order for architectural value, prepares descriptive catalogues of articles collected and other exhibits in museums. He may deliver lectures to students and other interested in archaeology, may undertake architectural survey of temples and monuments to study form and style of different periods.

2. Epigraphist. Studies inscriptions on ancient monuments, temple walls, stone slabs, rocks, copper plates and other media and deciphers writing to depict historical evolution of country, people and place and to reveal lost history of past and early rulers, their culture, social and religious systems etc., visits historical and other

important places and examines inscriptions on rocks, copper plates, temple walls, images, coins, seals etc. Takes ink impressions of inscriptions found on walls, stone slabs, pillars etc. on paper, deciphers or decodes contents of such inscriptions written in various languages and scripts. Publishes results of investigations reflecting on history and civilization. May furnish required information to scholars and research workers.

3. Numismatist. Specialises in collection, reading inscriptions, study and interpretation of rare old coins of historical and antique importance; tours country, collects rare coins and reads and deciphers old coins, classifies coins according to period of existence etc, undertakes research on origin and history of old coins and publishes reports and articles, arranges and displays coins in exhibition halls, museums etc. He may transact in the sale of rare coins. He delivers lectures on historical and cultural importance of coins.

4. Archivist. Acquires, maintains and supplies reference manuscripts and other permanent records of historical and administrative importance, appraises public records and documents transferred to archives according to historical significance and enduring value and recommends weeding of unimportant material, prepares indices, guides, and other reference media, acquires on payment or otherwise documents of archival importance from private sources; safeguards and preserves records, adopting modern means such as fumigation, lamination, air cleaning and microfilming etc., acts as a consultant to Government agencies, academic institutions etc.

For all these jobs it is necessary to have knowledge of some ancient Indian languages such as Sanskrit, Pali, Aś'amaḡadhi which facilitate work of this nature. Degree holders and post-graduates in these languages can also find employment in the fields and occupations mentioned herein.

The following organisations have occupational opportunities to the specialists in history. The types of occupational opportunities are also given.

1. Archaeological Survey of India. Director-General, Additional Director General, Joint Director (General), Director (Archaeology), Superintending Archaeologist, Deputy Superintending Archaeologist, Assistant Superintending Archaeologist, Registering Officer, Chief Epigraphist, Senior Epigraphical Assistant, Technical Assistant, Curator etc.

2. National Council of Historical Research. New Delhi. Director, Editor-cum-Project Officer, Senior Professional, Publication Officer, Junior Professional, Research Officer, Senior Research Assistant, Technical Assistant etc.

3. National Archives of India, New Delhi. Director of Archives; Deputy Director of Archives, Assistant Director of Archives, Archivist, Assistant Archivist.

4. National Museum, Delhi. Director, Assistant Director, Keeper, Deputy Keeper, Senior Librarian, Senior Museum Assistant, Technical Assistant, Museum Lecturer, Assistant Librarian etc.

For Group 'A' and 'B' recruitment is done through UPSC and for group 'C' and 'D' it is done through Employment Exchange and advertising vacancies in newspapers.

CHAPTER 8

CAREERS IN HOTELIERING

The basic necessities of human beings universally recognised are three—food, shelter and clothing—satisfying hunger, sleep and decorum respectively. However, provision of these things in their barest form does not keep aspired man happy because he craves for them in better and sophisticated way. A person not getting food for days together might feel happy if he gets a meal, of course, grains, for his instant need is to fill up bellies. But a person aspires to improve his quality of food once there is no problem of simply filling bellies. He may think of having rich, richer, richest food and can innovate different dishes. So is the case of other needs of shelter and clothing. All these things can be met at one place called hotel—a modern hotel—provided he has sufficient money to spend. Through man's craving for better things the hotel industry comes into existence and grows. But ascribing the growth of hotel industry on this score may not be correct because man does not get the same home comfort at every place he goes. If he is on the move, visit, trip, excursion he needs such a place where his needs can be satisfied. That is the place called hotel which offers every care man or the customer desires.

Customer's satisfaction is the first duty of the hotel industry hence this industry does not afford to be discourteous and cannot enter into shoddy deal with customers. Persons satisfied of the services offered by a particular hotel will like to visit it again and also might recommend to his friends and relatives. That itself becomes success of the hotel.

Modern concept of hoteliering has been drastically changed. All sorts of comforts, choicest dishes and amenities are being provided to customers at their asking. Sitting in a posh room decorated with choice blow-ups, attractive paintings, sylen atmosphere, sweet melodious tunes, relishing food and drink of rare quality, instant care by the hotel staff, provisions of bushy and soft chairs and many other things make the customer happy. But behind all this comfort he perhaps, may not be aware as to how many people might be working, how many departments of the hotel are involved. These people working behind the curtain bring the hotel industry a success. Thus this hotel industry offers lucrative job opportunities to young people who have genuine cares, hospitality, service attitude towards others.

A hotel in this respect is home away from home. It is the only alternative for home comforts for persons who are away from their homes. To make this possible, a hotel has to employ well trained staff to run it. It is said that a modern hotel never sleeps. It is open

for twentyfour hours a day. It works round the clock in three shifts each shift being of eight hours duration. When the peak-season is there, its staff has to work overtime without showing any sign of tiredness. Young boys and girls desirous of entering into this industry in any capacity must have will to do hard work, must possess temperament to get along with other persons and a strong desire to look to the needs and comforts of guests can think of better prospects in this industry.

Hotels have been classified into several categories as five star, four star, three star, two star and one star, depending upon size, location, facilities for parking vehicles, swimming pool, facility of air conditioning, standard of dining room, services and house-keeping. To carry the work smoothly without disturbing guests' comforts a hotel is divided into several departments, each being assigned distinct duties. These departments may be Front Office, House-Keeping, Food and Beverages, Accounting, Engineering and Security. All these departments offer employment opportunities of different nature. Here description of each department is given so as to acquaint those candidates who have a hidden wish to enter into this industry.

(1) Front Office. As soon as you enter the main doors of the hotel you are greeted warmly and cordially by a man wearing smart outfits. He is a Doorman who welcomes you with a smile. You must be carrying some luggage and want to have assistance to lift it. Another person in equally attractive uniform will come to you, take the luggage and carry it to your assigned room free of cost. He is called a Bellboy. This bellboy generally checks roomlights and other facilities provided in the room. He also provides information with regard to services that are being offered by the hotel such as serving hours, duration of dining hall. To Communicate with customers gently and effectively and with proper manners and etiquettes the bellboy should be fairly educated. Generally he has passed his School Leaving certificate examination. There are a number of Bellboys whose work is supervised by a Bell Captain. He assigns duties and shifts to the bellboys.

At the reception counter receptionist again welcomes guests with warmth and notes down details like name, address, etc. Generally receptionist is a young and attractive lady. The duties of receptionist are to maintain a chart of vacant rooms, keep contact with House-keeper, get rooms ready for guests, attend to telephone calls of guests. It is the behaviour of receptionist which creates first impression on guests. She should be smart, well-mannered and be able to talk in an easy and friendly way. Youngmen who are smart, polite having well-groomed personality are also considered for receptionist's post.

There is an information Counter manned by a smart, well-mannered information clerk who receives telephone calls for guests and passes on to them through a Bellboy. He is generally a 10th class pass possessing a Certificate in Hotel Reception.

The head of the Front Office is Front Officer Manager who is an experienced supervisor, understands and assists visitors. He is quite well-informed with cool temperament and possesses business acumen. The first visit of customers is to the front office and hence, it has to be maintained with high standard decorated, to suit different tastes. The Front Officer Manager is a graduate with a liking for public dealing.

(2) Hotel House-Keeping Department. A hotel is next to home for customers. Therefore, it is kept clean, tidy and loveable. This is the duty of this department. It looks after cleanliness in rooms, lounges, lobbies, restaurant, dining hall, parks, etc. Beautification of interior with flowers and paintings, maintaining stores of linen, uniforms, stationery items for guests are looked after by the department. All employees except room-boys are women. The department is headed by an Executive House Keeper whose duties include organising and supervising work of Floor Supervisors, House Keepers, Room Maids and Linen Maids as also train them up according to requirements.

Linen Maid's job is to collect bed-sheets, pillow-covers, towels, table covers and napkins and send them to laundry for washing. After received from laundry all these items are checked and stored in the Linenroom.

House-keeping Assistant is a secondary school final pass and holds a certificate in House-keeping or a graduate or holder of a three-year Diploma in Hotel Management and Catering. He supervises work of Room Maids and Chamber Maids. Floor Supervisor looks after cleanliness of a section of the hotel.

Executive House-keeper manages the entire department. She should be good at planning, organising and coordinating of her own department as also keeping liaison with other departments. She must possess creative imagination with sensitivity to customers' needs. She arranges medical care for customers and staff on duty. She must be a diploma holder in Hotel Management and Catering.

(3) Food and Beverages Department. This Department is divided into two sections viz. (1) Kitchen, and (2) Restaurant/Bar-Services.

In kitchen various types of dishes are prepared by cooks. There are separate kitchens for Indian continental and Chinese preparation for which specialist cooks are appointed. These cooks bear French names. They are called 'Chef-de-Cuisine', 'Chef-de-Paris'. Cooking is done in both styles, i.e., vegetarian and non-vegetarian. The work of chef-de-Paris is supervised by 'Sous Chef'. Cooks usually receive training in Craft Institute or through apprenticeship in a hotel. Diploma holders in Hotel Management and catering get higher positions. There is a separate section in the kitchen called 'Stik Room' where tea, coffee and hot drinks, toasts, sandwiches and other snacks are prepared.

Customers do insist on serving food in their rooms. Stewards of the hotel serve food in rooms. Customers may also go to a dining hall or coffee shops. Of course, restaurants or coffee bars are open to all. There are separate arrangements for parties, wedding, receptions, meetings. In the dining room there is a Hotel Hostess to welcome guests and look after their comforts. She is a certificate holder in Hotel Reception. The in-charge of a dining hall is called Maitre-de-Hotel. Chef de-Rang or Captain is in-charge of a part of a dining room. He supplies Menu cards, gets orders and at times helps customers in choosing dishes, informs special preparations of the day and suggests beverages suiting to meals. He passes orders to Demi-chef-de-Rang/Steward to serve guests. There is a Bartender who helps customers to choose drinks.

(4) Accounting Department. As elsewhere there are Chief Cashier and Cash Clerk or Bill Clerk whose main function is to maintain account and prepare chartered accountancy, cost and works accountancy.

(5) Security Department. This department has security guards and Security Officers to take care of the hotel property and also look after guests' security. They are generally retired army personnel and wear distinct uniform.

(6) Maintenance Department. The hotel requires air-conditioning arrangements, boilers for constant flow of hot water, repairs work. For this purpose there are Engineers, Electricians, Plumbers, Carpenters and such other workers.

In the premises of the hotel there are shopping centres, beauty parlour, beauty saloon, swimming pools, health clubs; luxury coaches and taxis are also available to take customers for sight seeing. Tennis courts and accommodation for other games is also available.

General Manager is overall in-charge of the hotel and is assisted by Managers/Assistant Managers of various departments. They hold professional degrees in Management Science and Labour Relations.

All employees engaged in essential services of the hotel are provided single unfurnished residential accommodation. They get tea, snacks, refreshment, etc. free of cost during working hours. Kitchen staff enjoys free lunch/dinner. Other employees are given these things at subsidised rates. Managers and Executive staff are provided furnished residential accommodation and enjoy the same food and facilities that are provided to guests.

Training. All the hotel staff must be trained. The following institutions offer training in various branches of the hotel industry.

(1) Hotel Management Institutes. These are called Institute of Hotel Management and Applied Nutrition and are at four places at Bombay, Madras, Calcutta and Delhi. Admissions to Diploma

Course in Hotel Management and Catering is offered to 12th class pass boys with Science and Commerce subjects with 60 per cent marks through a combined competitive examination.

(2) Food Crafts Institutes. There are 12 Food and Craft Institutes at Bangalore, Hyderabad, Alwayee, Lucknow, Pune, Goa, Bhubaneswar, Ahmadabad, Jaipur, Chandigarh, Bhopal and Panipat in which courses are offered in cookery, bakery, hotel reception and book-keeping. 10 class pass candidates are admitted in these courses. Their duration is generally of 6 months to one year.

Under the Apprenticeship Act every hotel has to train a certain number of apprentices compulsorily in the trades of cook, steward, house-keeping, restaurant, hotels, bakery and confectioner, hotel clerk/receptionist, linen keeper, pantryman, canteen service/canteen supervisor, bill clerk and bar-man/bar-tender. Admission qualification is 10th class pass. Apprenticeship training period is between one year to three years during which trainees get stipend of Rs. 130 to Rs. 150 depending upon the year of training as per rules. Some hotels offer more stipend. Admission to apprenticeship training is done in March and September.

Some hotels have their own management programmes of two to three years duration. Graduates/three year Diploma holders are eligible. On completion these trained people are absorbed in middle management positions. Emoluments vary from hotel to hotel but they are attractive enough. There are a number of hotels of the type mentioned earlier in cities, urban areas and at places of tourists' importance, beaches, historic places where these trained people find employment.

In addition to wage-paid job opportunities, there are self-employment opportunities by running a small hotel, bakery and confectionary shop, mobile kitchenet, outdoor catering for parties, wedding receptions, contract canteens in industrial, educational and medical institutions. Financial assistance can be had from banks. There may be a possibility of starting a hotel consultancy service also in areas of hotel construction, operations and development by charging fees for consultancy.

CHAPTER 9

CAREERS IN PHYSICAL EDUCATION AND SPORTS

Delhi's Ferozeshah Kotla Cricket ground. A test match between West Indies XI and India's XI. A battery of fast bowlers operating with blood thirst at our Little Master Sunil Gawaskar. Undeterred by the sheer pace and speed of Marshall, Garner, Holding he faced each delivery with unmatched courage and went on creating a historical record of surpassing Don Bradman's record of 29 test centuries. That is the opener Sunil Gawaskar. The whole cricketing world pays him respect and honour unquestionably due to him. Every body knows who is this 'Little Master'. Why ?

Shiny Abraham, P.T. Usha, Geet Sethi, Prakash Padukone, Mohammad Shahid, Satpal are some of the other players who brought glorious victories to their Motherland through their outstanding talent in sports field. Apart from individual honours as feathers in their caps, they and others have become significant sources of promoting national integration, international understanding and goodwill among the people of the world.

Giving a call 'youth of the world' to 'assemble on the playgrounds', Baron Piere De Cobertin when he reviewed Olympics in 1896, had further said, "in a spirit of comradeship and goodwill, setting aside petty factors such as nationality, religion, race, colour, creed, etc." which are the signs of parochialism, short sightedness and dwarfness of mental faculty. To bring people belonging to different faiths and affiliations, different social strata, different economic standing, well! there is no sphere equal to sports."

It is pertinent to quote Dr. Edward Stiet, a visiting American Professor in 1971.

"Any educational programme envisaged by the Government of free India without a proper and respectable place for physical education and sports activities in the curriculum of schools and colleges, students would be disintegrating, discouraging and above all defeating the purposes of total education for a tolerant, compassionate and social life". Keeping in view the potentialities of physical education and sports activities in educational institutions it is indeed a pious job of it to make each individual physically, mentally, emotionally, socially and morally fit to live the life in the true sense of the term, it serves best their fellow beings and the nation in general. Hence, it is a practical and pragmatic approach from which springs national integrity, and upholds the tenet that the whole world is a family.

Physical Education is no more routine co-curricular or extra-curricular activity just to engage boys in a kind of activity but well-drawn physical educational programme is bound to prove conducive to an individual for his healthy life, develop socially and contribute to his physical and mental health. It is an instrument to develop character and good human relationship, a vehicle for promoting national integration, foster self-discipline, self-responsibility and self-fulfilment. No wonder then! it has acquired a place of prominence in the charter of UNO. India too, has recognised its importance and now every school and college has this programme.

The objectives that have been recognised in introducing Physical Educational programme are to: (1) Promote and maintain robust physical fitness. (2) Learn and develop physical skills, sport skills and recreational skills. (3) Learn to use leisure time in enjoyable and constructive ways. (4) Avoid monotony of dull and uninteresting work. (5) Promote social contact and friendship. (6) Promote social equality, mutual integration and eliminate caste, class, and community feelings or narrow approach. (7) Counteract mental and emotional tension of modern working conditions, worries, nervous disorders etc. (8) Cultivate and improve personal and social behaviour.

Physical Education programmes strongly emphasize that all persons—rich or poor, high status—economic, social, political or cultural, irrespective of religious background are equal in their activities and are governed by the same rules and regulations. All individuals of merit have equal opportunities. Positively speaking physical education fights out all the evil and separatist forces and tendencies. A person moulded into this crucible extends the same attitude to all the spheres of life, where multiple languages are spoken, different faiths are observed, different cultures prohibit free contacts. Physical Education removes such barricades, strikes cooperative note and thus reinforces the most coveted sense of national integration.

Leisure time is double edged weapon which stimulates a person either way. If this time is not fruitfully utilised it may lead a person to monstrous thinking and behaviour inimical to the society through anti-social activities. On the contrary properly organised, planned and conducted leisure time may, why may, will prove to be a boon in disguise. It has a potential to mar or blossom the prospects of an individual as well as the nation. Optional and voluntary activities of sports and games, National Cadet Core, national service schemes, scouting, games in our schools and colleges are doing a fine job to foster qualities of discipline, patriotic feeling, love and utmost regard for human beings, more towards secularism.

With the objectives that have been quoted above Government of India had started two premier institutions to inculcate the philosophy in the minds of our young people. These are: (1) Luxmibai National College of Physical Education, and (2) Netaji Subhash National Institute of Sports.

Brief information of the two institutions is given below:

<i>Name of the Institution</i>	<i>Area of Physical Education</i>	<i>Nature of the Course</i>	<i>Duration</i>	<i>Age</i>	<i>Educational Qualification</i>	<i>Mode of Selection</i>
Netaji Subhash National Institute of Sports, Motibagh, Patiala	Athletics, Badminton, Basket ball, Boxing, Cricket, Foot Ball, Gymnastics, Hockey, Judo, Lawn Tennis, Swimming, Table Tennis, Volley Ball, Weight Lifting, Wrestling, Kabaddi, and Khokho.	M.P.Ed.	22 months	Male 22-35 Female 21-35	Degree/NIS Diploma/5 years coaching experience, proficiency in sports	Selection test
		B.P.Ed.	10 Months	"	Degree/SSC and represented in International sports or national sports for three years	"
		C.P.Ed.	6 Weeks	"	In-service Physical Education Teachers	"
		Refresher Course	—	—	In-service Coaches	—

<i>Name of the Institution</i>	<i>Area of Physical Education</i>	<i>Nature of the Course</i>	<i>Duration</i>	<i>Age</i>	<i>Educational Qualification</i>	<i>Mode of Selection</i>
Laxmibai National College of Physical Education, Gwalior	To prepare highly qualified leaders in the field of physical education, sports and recreation	B.P.Ed.	4 Years	16-20	Higher Secondary or equivalent	Selection test and Medical Examination
		M.P.Ed.	2 Years	19 and above	B.P.Ed. with 50% marks	"
		M.P.Ed. (Summer Course)	3 Years	"	D.P.Ed. + 5 years experience	For in-service physical teachers only
		M.A./M.Sc.	2 Years	19-23	Degree and should have represented college in at least two games/university in one game	—
		M.Phil.	1 Year	—	M.P.Ed. with 55% marks	Entrance Examination
		Ph.D. facilities are available.	—	—	—	—

Our national policy of sports has been designed to revitalise and reactivate the sphere of Physical Education, sports and games only in the recent past and results achieved are the best spokesman of it if we look at achievements in 9th Asian Games, recently conducted games at Dhaka, Bangla Desh. All these aspects of Government policy are yielding positive results in encouraging sportsmen to come along, occupational openings for outstanding players and spread of institutions imparting instructions in physical-education, sports and games. Spirit is important than absence of certain facilities and resources.

Education and Training. The two institutions quoted above and other several institutions under various universities and state Government departments prepare highly qualified and trained personnel in this field of physical education, sports and recreational games. At present courses at graduation and post-graduation level are available at 38 universities in India. A few of them also offer diploma and certificate courses. They are generally known as Certificate in Physical Education, Diploma in Physical Education, Bachelor of Physical Education, Master of Physical Education. In some institutions research facilities leading to Doctorate in Physical Education are available. The shorts of these courses are C.P.Ed., D.P.Ed., B.P.Ed., M.P.Ed. and Ph.D.

In addition to 38 universities there are 56 Colleges/Institutions of Physical Education in India which provide a variety of courses in Physical Education.

Employment Opportunities. There is a wide range of occupational opportunities in the Educational Institutions, councils of sports, national sports organisations, Nehru Youth Centres, public sector undertakings, private sector establishments and several Government departments at State and National level. Here we have to make two distinct divisions: (1) Providing direct employment in the field of education in various capacities of organisation, planning and implementation, and (2) those who get employment on the strength of the performance in various games to play them at state, national or international levels as professionals in which case their employment or the designations of a particular establishment remain a cover and their main activity is to participate in the games and sports till such time they are playing good games. After that they work in their jobs as others do.

Certificate holders in Physical Education are generally posted as Physical Education Instructors in schools, Degree/Diploma holders as Directors of Physical Education in secondary/higher secondary school, and colleges. Posts in supervisory and administrative cadres are held by Post-graduates in Physical Education or outstanding sports men/women of international/national repute, persons trained at National Institute of sports etc. The following is a list of actual occupations for persons trained in Physical Education, sports and games:

Lecturer, Reader, Professor, Dean, Director, Assistant Professor, Assistant Lecturer, Junior Lecturer, Demonstrator, Sports Officer, Physical Training Instructor, Physical Director, Principal, Vice-Principal, Assistant Master, Method Master, Research Assistant, Physical Education Teacher, Sports Coach, Sports Superintendent, Sports Supervisor, Joint Director, Youth Organizer, Dy. Sports Officer, Regional Sports Officer. These vacancies are filled through advertisement.

It should be gratifying to the sportsmen of outstanding performance that certain barricades that come in the way have been removed to make selection procedure straight. For various posts all employers are required to notify vacancies to the nearest employment exchange as per the Central Act. This has been waived in case of sportsmen. Even though there is no reservation for sportsmen for employment under the public sector the employers who fall under this sector can recruit sportsmen to the extent that overall percentage of employment of reserved categories like SC/ST, Ex-Servicemen, Handicapped etc. does not cross 50 in a given recruitment year. And there is absolutely no bar as to how many sportsmen could be given employment under the private sector. In fact, a very good sportsman is a lollypop for the employers especially private employers who pick them up irrespective of qualifications and other conditions. It is certainly a matter of satisfaction that in these days of employment hard to come by, sportsmen are easily chosen.

The criteria for employment of sportsmen/women under the Government or public sector undertakings are:

Candidates should be outstanding sportsmen/women in the games viz. cricket, volley-ball, weight lifting, power lifting, best physique, kabaddi, table tennis, badminton, football, hockey, wrestling and should have participated in Inter University, National Senior/Junior or International level games and those who have been awarded National Awards in Physical Efficiency under the National Physical Efficiency Programme. Naturally for selection purposes candidates have to produce competency certificates in recognition of playing the games at the levels mentioned above. These certificates are awarded by the following authorities:

<i>Level</i>	<i>Competent Authority</i>
(1) International	Secretary of the National Federation of the game concerned.
(2) National	Secretary of the National or State Federation of the game concerned.
(3) Inter University	Dean of Sports or other officer/incharge of the University concerned.

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| (4) National Sports
(school games) | Director/Addl. Director/Dy. Director in overall charge of games for schools in Directorate of Public Instructions of State. |
| (5) Physical Efficiency Drive | Secretary or other officer in overall charge of Physical Efficiency in the Ministry of Education and Social Welfare, Government of India. |

Well known establishments provide facilities for practice in the game and also offer higher emoluments, out of turn promotions, ex-gratia payment and such other things.

Following are some of the employers who offer employment to outstanding players against the vacancies mentioned against their names:

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| (1) Posts and Telegraph
Dept., Govt. of India | Junior Engineer, Postal Assistant, Sorting Assistant, Time Scale Clerk, Telephone Operator, Telegraphist, Technician, Postman, etc. |
| (2) Accountant General's
Offices | Clerk and Typist |
| (3) Central Reserve
Police Force | Sub-Inspector, Head Constable, Constable |
| (4) Border Security
Force | Constable, Head Constable, Sub-Inspector |
| (5) Nationalised Banks,
State Bank and
Reserve Bank of
India | Clerk, Typist and other cadres |
| (6) Steel Authority of
India | Clerk, Typist and other cadres |

Indian Airlines, Food Corporation of India, Fertilizer Corporation of India, Delhi Development Authority and a number of Government Departments and Public Sector Undertakings employ sportsmen/women on priority basis. In addition to the regular salaries all players get prize money as professionals which is exempt from income-tax deductions. Sportsmen of calibre are awarded Arjun Awards every year

Being a sportsman is an honour. You become a centre of attention. People vie to have a look at a sportsman. Why not to try to become one?

CHAPTER 10

CAREERS IN COMMERCIAL AND SECRETARIAL PRACTICES

Managers, Directors, Secretaries and other top executive officers by themselves cannot run their business, industry or service institutions single handedly because they need a well knit information system for taking quick, instant and mature decisions. Professionals of the kind need services in discharge of their duties of those persons who perform a job rendering commercial and secretarial assistance. The management of every establishment, business, industry, Government office, educational institution heavily depends upon the quality and effective services for its success of office activities. For its qualitative decision the management must receive adequate, accurate and timely information. Moreover, the services so rendered must be reliable and authentic. Still more it requires secrecy also. A modern office is just not a storehouse of documents, files, papers etc. but a place from which information is gathered, processed, analysed, recorded and communicated for the benefit of administration and management. The personnel who provide such services are termed as commercial and secretarial service personnel.

Management work today is not a simple task. It has become increasingly complex because of enactment of various legislations, legal requirements imposed on companies—both Public and Private Sector—regarding procedure, accounting, allocation, production, sales etc which require properly and adequately trained personnel.

Since Independence India has witnessed a rapid growth in the number and size of business, industry and Government organisations and this trend is likely to keep its tempo in future too. With the rise in business and economic activities there is bound to be a corresponding increase in the demand of persons to be employed in those occupations who can play, though a secondary role, yet their importance lies in the fact that the executives, directors and managers can utilise their time in a more useful way. They therefore, need services of other persons to help them in carrying out duties without hindrances. Persons who discharge these functions are called Stenographer, Stenotypist, Private Secretary, Reporter, Office Assistant, Receptionist, Book-keeper, Accounts Clerk, Store-keeper, Cashier, Salesman etc. These occupations require specially trained people.

If receipts and disbursement of money is not looked after carefully, if items in the store scattered here and there, if decisions and records are not maintained properly, if customers are not received with respect and honour, if papers are not prepared

instantly, if products lie unsold well, then, that industry, business is bound to collapse.

Indeed, persons holding these posts are small in rank, but their importance to the business or industry is just equal to that of a manager or a director just like a peg of a wheel of a chariot. If the peg of the wheel of the chariot gets off the chariot will not run. That is the importance of these people. It therefore, is of utmost importance to know about these careers which are quite within the reach of young people at a cost of little training and expenses.

The beauty of these occupations is that both males and females can enter into them. However, qualities that are quite essential to these careers are : smart look, alertness, sense of responsibility, pleasant voice, methodical work habits, good office etiquettes and manners and ability to get along with others. In fact, employers always are in quest of really good workers. There is a shortage of good workers and hence their demand is more.

Speaking about occupational opportunities for trained people in commercial and secretarial practices it can be said that there are good many opportunities. We have already seen that for every one thousand workers there are 63 managers. Each of these managers requires services of stenographer or stenotypist, which means that there are equal occupational opportunities for them. Some of these people are called Personal Secretary, Personal Assistant in which capacity their responsibility is more in keeping secrets of office. Each establishment requires services of a receptionist. There are innumerable such establishments which employ receptionists, cashiers, accounts clerks, office assistants, book-keepers and store-keepers. In the fitness of things it is better to know what work is expected of these people so that an idea can be formed of their importance in the business, industry, or service. Alongwith other relevant information is also given.

(1) Private secretary-cum-stenographer/Personal Assistant. He works as a personal and confidential representative of an officer to whom he has been attached. His officer is always busy in meetings, discussions, tours and hence does not find time to look after routine nature of work relating to upkeep of the office. The Personal Assistant attends to routine correspondence, arranges interviews with visitors, attends telephone calls, takes dictation and transcripts it on a typewriter. He reminds his officer of date, time and place of his engagement. If need be, he accompanies his officer on tours too. The job of a private secretary is the most delicate one. If he decides to play a hoax he can do that. He can let the secrets out by being a hand in glove with enemies. There is nobody between the officer and the secretary who can know what decision has been taken, what strategy has been adopted. There are many secrets of national and international importance and if the secretary is swayed by the glamour of life, craze for money he has the easiest way to do but by becoming a traitor to his own country. Looking to this aspect it will be con-
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tured that how delicate is the job of a secretary. By virtue of being a key person, he commands respect from people. His success depends not only on his skill but also on his personality. He must invariably be intelligent, smart, well-mannered and courteous. He must also be dependable, responsible, honest and loyal since he shares secrets of his officer.

Stenographers belonging to Grade I and selection grade of the Central Secretariat Stenographers Service are generally appointed as Private Secretary/Personal Assistant to senior officers/Ministers. They are experienced people and are drawn from the cadre of stenographers. They receive training as Private Secretaries. The Institution of Secretariat Training and Management conducts such a course. Other Institutes which offer such courses are given in the following table:

<i>Name of the Institute</i>	<i>Duration</i>	<i>Qualifications</i>
1. Kamla Nehru Polytechnic for Women, Hyderabad (AP)	2 Years	S.S.C. or H.S.C.
2. Govt Polytechnic for Women, Guntur (AP)	2 Years	S.S.C. or H.S.C.
3. Govt. Polytechnic for Women, Kakinada (AP)	2 Years	S.S.C.
4. Girls Polytechnic, Gauhati (Assam)	2 Years	H.S.C.
5. Women's Technical Training Institute, YWCA, New Delhi	2 Years	H.S.C.
6. YWCA Secretarial School, New Delhi	1 Year	H.S.C.
7. Commercial & Secretarial Institute, Delhi	1 Year	H.S.C.
8. Institute of Commercial Practices, New Delhi	2 Years	H.S.C. (45%)
9. Faculty of Management Studies, Delhi University, Delhi	9 Months	Graduate
10. Vocational Training College for Women, New Delhi	1 Year	H.S.C.
11. New Delhi Polytechnic for Women, New Delhi	1 Year	Graduate
12. College of Vocational Studies, New Delhi	3 Years	H.S.C.
13. Women's Polytechnic, New Delhi	2 Years	H.S.C.
14. K.J. Polytechnic, Branch	3 Years	S.S.C.
15. K.D. Polytechnic, Patan, Mehsana	3 Years	S.S.C.

<i>Name of the Institute</i>	<i>Duration</i>	<i>Qualifications</i>
16. Govt. Polytechnic, Rajkot	3 Years	S.S.C.
17. A.V. Parbh Technical Institute, Rajkot	2 Years	S.S.C.
18. Govt. Girls Polytechnic, Ahmedabad	3 Years	S.S.C.
19. Govt. Girls' Polytechnic, Surat	3 Years	S.S.C.
20. G.R. Institute of Secretarial Practices, Bangalore	3 Years	S.S.C.
21. Govt. Polytechnic for Women Bangalore	3 Years	S.S.C.
22. Polytechnic for Women, Bangalore	3 Years	S.S.C.
23. Women's Polytechnic, Trivandrum	3 Years	S.S.C.
24. Women's Polytechnic, Bhopal	2 Years	H.S.C.
25. S.V. Govt. Polytechnic, Bhopal	2 Years	H.S.C.
26. Motilal Nehru Polytechnic, Pondicherry	3 Years	H.S.C.
27. The Govt. Polytechnic for Women, Madurai	3½ Years	S.S.C.
28. Govt. Polytechnic for Women, Madras	3 Years	S.S.C.
29. Aligarh Muslim University, Aligarh	1 Year	Graduate
30. Govt. Girls Polytechnic, Lucknow	3 Years	Intermediate
31. Govt. Polytechnic for Women, Chandigarh	2 Years	S.S.C.

Some of these institutions conduct part-time courses and courses in stenography and accountancy, office management also.

The Personal Secretary attached to the Joint Secretary is a senior group 'B' officer.

(2) Stenographer/Stenotypist. Stenography means taking down dictation/speech at verbatim in a coded script and transcribing it into a language. The script is called short-hand because it enables a person to take down all that is spoken to him. The stenographer prepares talks and speeches, technical articles, financial reports, court judgements and inter office communications. He also attends to office work of clerical nature.

The minimum qualification for a stenographer is a pass in X class but to be a good stenographer some more qualification becomes

an asset. He must also be good at English. There is a trend to have stenographers in Indian languages also. There are a number of commercial institutes which conduct courses in stenography. However, possession of a certificate is not that important but speed in taking down dictation counts very much. There are two types of tests a stenographer is expected to give. One that is of 100/40 and another is of 80/30, i.e., speed in stenography and typing at 100 and 40 and 80 and 30 words per minute. Speed in regional languages is less. Entry into employment is dependent on attainment of required speed in a test administered by an employer. Stenographers have ample promotional avenues as they go on getting experience.

It must be remembered that this trade is quite in demand because really good stenographers are not available in plenty. In private establishments and public sector undertakings they are picked up as a hot cake with good starting emoluments. One has a chance to make a career in this occupation if one really is proficient in work.

(3) **Reporter.** He is a person who takes down verbatim record of discussions held in meetings, conferences, state legislatures, Parliament and later transcribes them on a typewriter. Therefore, these people are always experienced hands in stenography. By the nature of work, reporters are expected to have a very good command over a language, must be ready to work at odd hours and those who are employed in newspaper have to sort out information for reporting purposes. However, such reporters have a free go everywhere because they are the only persons between the character and newspaper for giving publicity—good or bad. That is why even big people do not pick-up quarrels with them. These people are also quite in good demand provided they fulfil other essential requirements.

(4) **Storekeeper.** This is a person who receives and issues various types of goods, tools, equipments, raw materials, etc. and maintains record of each item, checks incoming supplies, bills and vouchers and examines them for their correctness. He periodically conducts inspections of the stock and wherever he finds shortage of certain goods he orders replacement.

Each and every industry has to use a number of articles and hence they maintain a store where storekeepers are employed. The ultimate responsibility lies with the storekeeper if he does not provide required material for use. Persons who have done vocational course in storekeeping have bright prospects of employment as storekeeper and they can get promotions to the posts of Senior Storekeeper, Stores Supervisor, etc. Now the trend is to select degree/diploma holders in material management.

Other occupations in this field are Receptionist/Reception Clerk, Office Assistant, Marketing Research Assistant, Investigator,

Book Keeper, Accounts Clerk, Cashier, etc. for whom occupational openings are good. Their asset is good look (receptionist) and knowledge of mathematics for doing calculation.

Staff Selection Commission recruits stenographers to appoint them under the Central Government and State Public Service Commission to the job for their respective Govts. Recruitment of stenographers is a regular annual feature. Regular training in stenography is offered in almost all the Industrial Training Institutes for which entrance qualification is a pass in secondary school certificate examination with English as one of the subjects. This is a course of one year duration and no fees are payable, on the contrary some trainees get stipend.

After passing out the Certificate Course in stenography they can register with an Employment Exchange serving their area for getting an employment. It is the experience of the Employment Exchanges that there are not many candidates having good speed in stenography and have to issue Non-Availability Certificate to the employers. This situation should prompt some people to think about entering into this profession accordingly. Private sector employers have their own arrangements of recruiting stenographers.

Apart from paid jobs that have been enumerated above some of these people have self-employment opportunities. In courts, one can establish himself as a typist. The work will pour to him. One may create an agency to render secretarial assistance to big firms, start a training institute for which purpose he can receive Government grants once such an institute is recognised. In nutshell, a properly trained person in this field will not find it difficult to get an employment and prosper in it.

CHAPTER 11

CAREERS IN ACCOUNTANCY

Accountancy holds an important place in the commercial and industrial world. Since independence, there is an astonishing growth of Indian Industries and Commerce which has thrown many career opportunities for chartered accountants, cost and works accountants, company secretaries. Accountancy is related to preparation and maintenance of financial records and their periodic examination and interpretation. The fact that country's resources, particularly monetary resources of a country like ours have to be judiciously and meticulously used so that no wastage and squandering of public money is there. That is why an accountant is a key man in business enterprises who takes care of every penny as the maxim that if we take care of a penny pounds will take care of themselves or if we take care of a paisa, rupees will take care of themselves.

Accountants who are working in industries are of varied nature dependent upon training they receive, their ability and professional preparation. They may be Accounts Clerk, Accountant, Chartered Accountant, Cost and Works Accountant. Accountancy suits to both male and female candidates and since it involves only mental work handicapped candidates can also take up such employment.

What is it that is expected of these people in performing tasks in industries. It is explained below in brief:

Accounts Clerk is an employee lower in the hierarchy of jobs in accountancy. He maintains day to day record of financial transactions in a prescribed manner, makes entries in book-records to show bills, receipts, expenditure, amounts payable or receivable, profit or loss, sales and purchase etc. There are other occupations of similar nature which are called as Book-keeper, Bank Clerk, Ledger Clerk, Audit Clerk, Cost and Work Clerk, Cashier, Bank-teller, etc.

Candidates who have passed their secondary school examination are generally eligible to hold these positions but graduates are given preference. These persons should invariably possess legible handwriting and interest in figure work and capacity to do arithmetical computations and calculations accurately and swiftly.

Only few of these employees rise to higher positions of Accountants, Accounts Officers or Accounts Executives. Those employed in banking institutions have a chance to rise at a comparatively faster speed provided they are members of Indian Institute of Bankers because these are the only people who are eligible to appear for various examinations conducted by it.

At a professional level there are occupations as Accountants, Auditors, Cost Accountants etc. An accountant handles more complicated and difficult financial returns and ensures proper maintenance of accounts books and records. He is an expert Book-keeper.

An Auditor examines account books and financial records and certifies their accuracy and proper maintenance.

A Cost Accountant calculates cost of products or services by taking into account various cost and expenditure factors.

Recruitment to Govt. Supervisory posts is made from candidates who clear their Indian Audit and Accounts Service Examination, Indian Defence Accounts Service Examination, Indian Railways' Accounts Service Examination all of which are held combinedly along with Indian Administrative Service Examination conducted by the Union Public Service Commission every year. Graduates within the age group of 21-28 can appear for these examinations. After their selection they are intensively trained for the job.

Recruitment to lower posts of clerks is made by Accountant General through advertisement and inviting nominations from the Employment Exchanges. Railways have their own recruitment boards for recruitment of these personnel. Appointments to supervisory posts are made partly by promotions and partly through departmental examinations. Posts in nationalised and other banks, Reserve Bank of India and State Bank of India are filled through a competitive examination details of which may be seen under 'Careers in Banking Industry'.

We will see now the details about other careers.

1. Chartered Accountant. Chartered Accountants perform the most important part of professional accountancy. All of them are the members of the Institute of Chartered Accountants of India and these members only carry designation as Chartered Accountants. Under the Companies Act none other than these people can be appointed as auditors of companies as a professional practice.

In order to become a member of the Institute, a person has to pass Intermediate and Final Examinations of the Institute and should also complete a prescribed period of training as an 'Articled Clerk' for three years or as an 'Audit Clerk' for six years. The Institute also conducts a post-graduate course as Management Accounting for its members.

Functions of a Chartered Accountant. The Chartered Accountant is to undertake the following functions:

Preparation and analysis of accounts and financial statements of companies, examining and verifying accounts and issue of certificates regarding their financial conditions, assets, liabilities, profits

and losses; prepare returns for tax purposes, negotiate with tax authorities and advise on tax problems, advise on improving accounting system; offer consultancy on formation, financial structure, bankruptcy, dissolution and liquidation of companies; ascertain cost of production and its process at different levels and render advice on production of qualitative goods at most competitive prices; investigate financial position of business houses for issue of share capital, purchase, sale of financial business etc.; appointed as an executor or trusty; assist business management in formation of sound managerial policy, value shares of companies, work as an Arbitrator for settling disputes etc.

Qualities Required. He must have ability to work at figures and aptitude for it to do the work with ease and accuracy, possess good memory, analytical mind, capacity for details, good judgement, keen business sense; patience and tact, sound integrity and should be worthy of public confidence. Those who take up apprenticeship out of whom a small number gets through the examinations. Hence, candidates should prepare themselves to put hard and concerted efforts to pass the examination in Chartered Accountancy regularly.

Qualifications for Admission : The Examination in Chartered Accountancy is open to persons above 16 years of age provided they have passed senior secondary school examination and should clear the entrance examination. Graduates who have secured 50% marks are exempt from passing the entrance examination. It is necessary to serve as an apprentice to pass the Institute's examination. They will have to serve as articled clerk for 3 years or audit clerk for six years under the other chartered accountant as an apprentice. During this period they get stipend. During apprenticeship training they are not allowed to engage themselves in any other business or occupation. Students of B. Com or M.Com. can continue their education with a permission. Postal tuition is also available. Every student has to register with the Institute. Every student who has passed Final Examination of the Institute members of the Institute are described as Chartered Accountant. Every member on enrolment as a member is deemed to be Associate Member of the Institute. Those Associates who have been in continuous practice for 5 years, are entitled for Fellowship. They use FCA or ACA ahead their names signifying Fellow of the Institute of Chartered Accountants or Associate of the Institute of Chartered Accountants respectively. This is a qualification recognised for recruitment in Government.

Those who have passed Final Examination are exempt from Preliminary Examination of the Institute of Company Secretaries of India and from the subject of Advanced Accountancy of the Institute of Cost and Works Accountants of India. Those who have passed Intermediate Examination are eligible for Registered studentship of the Institute of Cost and Works Accountants of India and also are exempted from the subject of Book-keeping and Accountancy in its Intermediate Examination.

These Chartered Accountants have a wide field of employment in industry, commerce, banks, insurance companies, Government and private offices. Many of them rise to the positions of Chief Accountant, Financial Adviser, Internal Auditor, Company Secretary, General Manager, Company Director. Recruitment of them is made through advertisement or Public Service Commissions.

2. Cost and Works Accountant: Cost Accountant guides Industrial organizations in formulating their policies and their execution. He is related to internal management control, price fixation, measurement of efficiency, examining ways and means of reducing costs, evaluation of alternative project proposals etc.

This is a world of competitions. To keep prices competitive it is essential to increase sales of products and exercise constant vigilance and control for weeding out unjustifiable expenses by plugging all sources of wastages in purchase and use of raw materials or payment of labour and administrative charges. Hence, it entails on all the industrial establishments to ensure that all areas of planning, organisation, production, sales and finances are streamlined towards this goal. To do this industries require expert services of cost and works accountants or commonly known simply accountants.

Cost Accountants have to be members of the Institute of Cost and Works Accountant of India, Calcutta. Only members of the Institute who are in practice can designate themselves as Cost and Works Accountants. Membership of the Institute is restricted to those who have passed the Intermediate and Final Examinations of the Institute and possess approved practical experience in cost accountancy for at least three years. The Institute also conducts a post-membership examination in Management Accountancy. This is a useful qualification for those who are aiming at managerial and executive posts.

Training. It is open for men and women. The pass percentage of the students is very small therefore it requires intensive studies to pass it earlier. Candidates have to register as students with the Institute. They must have completed 18 years of age and should have passed 10+2 stage of examination to register with the Institute. The registered student should have to pass intermediate and final examinations within a period of 7 years after registration failing which their registration is liable to be cancelled.

All registered candidates have to undergo postal or oral tuition for 18 months each before they take up Intermediate and Final Examinations. Postal tuition is conducted by the Institute itself while oral tuition can be had in a selected educational institutions and colleges recognised by the Institute. Cost Accountants come from different disciplines like commerce, economics, science, engineering etc.

The membership of the Institute is divided in two categories i.e., Associates (AICWA) and Fellows (FICWA).

To be an Associate a candidate should be 21 years of age, passed Final Examination of the Institute and should have three years experience in the field of Cost Accountancy. A person who has passed the Final Examination of the Institute and is yet to be admitted as an Associate Member may be enrolled as a Graduate of the Institute. For Fellowship he should have attained the age of 26 years, held the position of Chief Cost Accountant for at least five years. The long forms of AICWA and FICWA are Associate of the Institute of Cost and Works Accountants and Fellow of the Institute of Cost and Works Accountants. The Final Examination has been recognised for recruitment purposes under the Governments for senior posts and services requiring Costs and Works Accountancy qualifications. Most of the Cost and Works Accountants find employment in manufacturing industries of iron, steel, cement, cycles, automobiles, telephones, locomotives, coaches, aircraft, ornaments, instruments, ship building, power plants, railways, defence establishments, road transport companies, state industrial corporations. Cost Accountants are employed in different capacities and at different levels in management, operational research, organisation and methods, work study and systems engineering. They also act as consultants, advisers as also practice cost accountancy.

Self employment opportunities:

Self employment as a professional practice in accountancy is quite remunerative. The accountants may practice it alone or in a joint venture to offer accounting service by charging service fees as is done in the legal profession.

Under the Companies Act all companies all over India have to get their accounts audited by appointing a Chartered Accountant as an auditor. For his services the accountant is paid fees. Without the certificate of an auditor, accounts and financial statements of firms and companies are not treated as authentic and acceptable to shareholders and other parties of the companies. The scope for Chartered Accountants is considerable. That is why more and more Chartered Accountants go for self employment by establishing their own chartered accounting firms. The same case is with Cost and Works Accountants whose services are hired by many companies to work out cost of their products and for other important processes in planning, management and administrative matters so that minimum expenditure would be involved and prices of the products fixed on a competitive basis.

CHAPTER 12

CAREERS IN AN ELECTRIC SUPPLY INDUSTRY

In a pitch darkness you just switch on a button and there is light. To get relief from unbearable heat again you switch on a button and there is ample air from a fan or a cooler. To quench thirst on a hot day you open a refrigerator and have cold water. On a bone splitting cold day you switch on a heater and you get hot air. Likewise to run a radio, T.V. and other appliances you have just to switch on a button, you get everything. Small and big industries, railways, transport vehicles run on a single source. What is that source which has brought revolution in the life of man? That is the source called power, energy and popularly as electricity. Many questions will be raised about it. At the moment the questions are: how does this electricity come to the common man? Who brings it to us? How is it created? And who creates it? To find answers to these questions it is quite interesting to know about it because all these questions offer a number of career opportunities to young people.

To know all about it we have to divide it suitably in four major parts *i.e.* its generation, transmission, receipt and distribution.

1. Generation. Electricity is generated through four major sources *i.e.* Hydro (Water), Thermal (Heat), Nuclear (Atom) and Gas. By constructing dams across rivers hydro-electricity is generated; by using coal, oil or gas and through heating thermal electricity is generated; by fission of uranium or plutonium Nuclear energy is generated.

2. Transmission. This generated electricity is to be transmitted to places at long distances. This is done through transmission lines on high towers or pressurised cables buried underground.

3. Receiving Stations. The electricity so transmitted is received in receiving stations.

4. Distribution. The electricity so received is supplied to consumers through sub-stations.

Persons who toil day and night in this industry can be divided into convenient groups. They are:

1. Utility Operations. For smooth and efficient supply of electricity to consumers it is essential to employ fully trained personnel in the semi-skilled, skilled and highly skilled categories. They are Blacksmith, Electrician, Fitter, Bulldozer operator, Cable Joiner, Instrument Technician, Repairer, Lineman, Miller, Turner, Welder, Wireman etc.

2. Infrastructure. The supply of electricity needs supportive services. Such services are provided by accounts personnel, management personnel, administrative personnel, medical staff, materials management, transport personnel and security staff. Apart from these personnel at higher level there are other workers like Bookkeepers, Accountants, Carpenters, Cashiers, Clerks, Draftsmen, Drivers, Mechanics, Moulders, Painters, Pattern Makers, Plumbers, Sarangs (Khalasis), Storekeepers, Watchmen etc. who extend their support.

3. Supervisory i.e. Operational Maintenance and Allied Jobs. Persons holding Bachelor's Degree, Post-graduate Degree, Diploma holders in Electrical, Mechanical, Civil, Instrumentation and Electronics Engineering are appointed for making electricity supply. What are the actual careers for these qualified people in the electricity supply industry can be seen in the following divisions of it.

1. Hydro-Stations. Operation is the most important function in a power house. The work is to be done round the clock and workers here have to work in shifts. The incharge is Shift Engineer who monitors the plant to ensure its smooth running. He also ensures safety of equipments and personnel working there. His main duties are to supervise, guide, assign and coordinate jobs of other operators. He is helped by an Assistant Shift Engineer who is promoted to the post of Shift Engineer after gaining some years experience. He has promotional opportunities as Maintenance Engineer, Senior Maintenance Engineer, Assistant Superintendent and Superintendent. On Maintenance side there are other positions called Junior Engineering Assistant, Engineering Assistant, Assistant Engineer, Maintenance Foreman Engineer, Maintenance Engineer Senior Maintenance Engineer, Assistant Superintendent and Superintendent. All of them are placed in proper grades.

2. Thermal Powers. As in the case of Hydro Stations in Thermal Stations also operation is the important aspect. All candidates begin their careers as trainees for a period of 18 months. Each trainee is assigned to a Guide Engineer for guidance. Degree/Diploma holders in Electrical / Mechanical Engineering are eligible. After training he is appointed as Junior Boiler Turbine Generator Board Operator. He coordinates activities of plant operators/attendants put under his charge. He has promotional opportunities as Senior Boiler Turbine Generator Board Operator, Assistant Shift Charge Engineer, Shift Charge Engineer, Assistant

Superintendent and Superintendent. Diploma holders after completion of training are appointed as Auxiliary Plant Operators and have promotional opportunities as Senior Auxiliary Plant Attendant, Boiler Operator/Turbine Operator, Main Control Board Operator, Senior Boiler Turbine Generator Board Operator, Senior Assistant Engineer, Assistant Shift Charge Engineer, Shift Charge Engineer, Assistant Superintendent and Superintendent.

Maintenance involves repairs/replacement of damaged parts of an equipment or complete overhaul to ensure maximum performance.

A graduate in Electrical/Mechanical Engineering starts his career as a trainee for 18 months and thereafter becomes Maintenance Foreman Engineer. There is also a scope for Instrumentation Engineers as above.

3. Receiving Station Operation. A candidate holding a degree or diploma in Electrical/Mechanical Engineering starts his career in the receiving station as a trainee for 18 months. After completion of training he is absorbed as Assistant Shift Engineer. He is responsible for transmitting and receiving information on various communication systems quickly and accurately and has to prepare a concise and intelligent report. He must look after safety procedures also. As he has to work in shifts he has to sustain shift duties and should also possess good vision. He can rise to positions of Shift Engineer, Assistant Engineer, Maintenance Foreman Engineer, Maintenance Engineer, Senior Maintenance Engineer, Assistant Superintendent and Superintendent. The same case is with those engineers who work on maintenance side.

4. Transmission. The duties of transmission division are construction and maintenance of transmission lines and telephone lines. It is also involved in activities like planning, surveying, preparation of plan and profile, foundations, erection of structure, stringing, grounding and communication. Regular and preventive maintenance is also done by it. Regular maintenance duties include patrolling overhead lines, checking of abnormality in towers, conductors, insulators and birds' nests on lines. Emergency maintenance includes inspection after it has been tripped, locating faults and repairing them. Preventive maintenance includes thorough inspection of foundations, structures, insulators and clamps once in two years.

A career of a degree or diploma holder in Electrical/Mechanical/Civil Engineering starts as a trainee for 18 months after which he is appointed as Line Inspector 'B'. He is responsible for operation, maintenance and construction activities of transmission lines of a section under his charge. He supervises work of Linemen, Head Linemen and Trainee Engineers. Promotional avenues for Line Inspector 'B' are Line Inspector 'A', Senior Maintenance Engineer, Assistant Superintendent and Superintendent.

5. Distribution. The work this division performs covers a network of cables from receiving stations and associated sub-stations of customers as well as underground cables, maintenance and repairs of these cables, laying and jointing of new ones or modification to the existing ones.

Career of a degree/diploma holder in Electrical/Mechanical Engineering starts as a trainee for 18 months after which he is appointed as a Junior Engineering Assistant. After one year's service, Junior Engineer can become Engineering Assistant and subsequently can rise to position of Assistant Engineer, Maintenance Foreman Engineer, Maintenance Engineer, Assistant Superintendent and Superintendent.

6. Planning and Design Department (Engineering Department). Planning invariably is the most vital task for effective operations of an organisation. In a power generating company it needs to have perspective or long term planning over a period of 10 years or even more. A Planning and Design Engineer, therefore is required to take certain calculated and unknown risks supported by judicious and timely decisions. He has to make load forecasts *i.e.* examine future requirements of power for additional consumers, new projects, industries and cities. In short-term planning he is required to prepare feasibility studies for new projects and annual capital budget expenditure forecasts. He is also responsible for operational planning which includes preparation of generation programmes for dry or monsoon seasons, prepare monthly generation schedule. He coordinates his activities with those that of other departments. He can rise to positions of Assistant Superintendent and Superintendent.

7. Load Despatch Department. In this division the incharge is called Load Despatcher who has to continuously monitor system operation and ensure that it is functioning along the line of planned system operation. He ensures continuity of supply to consumers and safety of personnel and equipments. He prepares routine daily, weekly and monthly reports on generation, water level, interchange operations, occurrences, communications, etc.

8. Testing Department. A Testing Engineer carries out pre-commissioning test programmes at site, on new relays, instruments, meters and any other special test. He repairs instruments and maintains records of tests and all equipments under his charge.

9. Construction Department. A Construction Engineer performs duties of planning, organising and executing all construction projects under his charge. He ensures a quick expeditious delivery of materials, obtaining of skilled personnel and coordinates with other departments. He supervises erection work of a plant and equipment. He looks after loading, unloading, cribbing and moving heavy equipments.

10. Civil Engineering Department. A Civil Engineer, although found in almost all industries, however, in Electric Supply Industry is responsible for erection, maintenance and upkeep of civil foundations and structures including transmission lines, quarters, railway tracks and hydro head works. He is to supervise and organise new civil constructions, additions and alterations to civil structures and buildings and prepares estimates for construction and maintenance work. He may aspire for promotion to the posts of senior Design Engineer and Chief Engineer (Civil).

Emoluments. There are twenty-five state electricity boards, practically one in each state. Naturally, therefore, pay-scales differ from state to state which depend upon state resources and net collection of each board. Secondly, the designations that are available in this industry also differ from state to state. Therefore, it is not possible to give emoluments of employees and engineers who take up jobs under various electricity boards.

Recruitment. Recruitment of senior positions of engineers is made through State Public Service Commissions. Positions of subordinate and junior posts of engineers are filled in through Employment Exchanges. Companies like National Thermal Power Corporation Ltd., Tata Group of Electric Company and such other recruit their personnel through advertisements. Selection of candidates is made through competitive examinations followed by an interview.

Working Conditions. Employees of the industry have to work in various areas of power plants in order to keep the plants in good condition for maintaining continuous and adequate supply of electricity to consumers. The operational staff of the industry work round the clock in shifts. However, in times of emergency the operational staff have to work even more. Since services of operational staff are urgent they are provided residential accommodation so as to reach the site immediately in case any crisis develops.

The work in the industry is full of risks. The electricity is a potential friend as well as an enemy. Negligence, carelessness, lethargy are the words which cannot be found in the dictionary of the employees of the industry. The current flows through wires and touching these naked wires means a danger. Electric current does not know a friend or a foe. Whoever touches it will equally be treated by it. Hence, utmost care has to be observed by these people for their own safety and the safety of others who make use of it or not.

Training. The workers who work in this industry are qualified mainly in electrical and mechanical engineering. There are different levels of these workers. Highly qualified workers are trained in Engineering Colleges. These colleges are affiliated to each university. In addition to these colleges there are certain other institutes

which train these people. They are the national institutes called Indian Institute of Technology. Admission to these colleges/institutes is effected in two ways—one by admitting them on the basis of number of marks secured by them in the qualifying examination *i.e.* 12th class or equivalent. The higher the number of marks secured by students greater are the chances of getting admissions. The second way is to hold competitive examination.

At the middle management level persons who have done their diploma in the above two branches in State Polytechnics are considered for positions of supervisory posts. They can improve their chances for higher posts by acquiring higher qualifications.

At the lower level persons who have undergone certificate courses in Industrial Training Institutes in the trades like Electrician or Wireman are considered for craftsmen's grades. State Public Works Department also awards second class wireman's certificate.

It is absolutely essential for workers in this industry to have a certificate because of the possible dangers involved in it. If we look at the employment figures in the industry in the past few years *i.e.* 1978, 1979, 1980 and 1981 it will be noticed that employment in the industry was 78, 81, 87 and 91 thousand respectively. This shows that there is an increase in employment each year. Persons trained in specific professions and trades find easy employment in the industry.

CHAPTER 13

CAREERS IN PARA MEDICAL FIELDS

'Early to bed and early to rise, is the way to be healthy, wealthy and wise', 'Prevention is better than cure', 'A stitch in time saves nine' are the maxims connected with people's health. Nobody wants to fall ill and suffer pain and agony. However, inspite of utmost care, human body is such a machine that sometime something goes wrong at somewhere and man falls ill. There may be a deficiency of nutrition which makes him weak. The cells in the body become weak and cannot function properly. Physical exertion exhausts man, infections and viruses catch him unawares, epidemics break out, natural calamities and catastrophies bring him unbearable pain, mental afflictions evaporate his health. All these reasons make the man ill. To get rid of these pains, agonies and affliction man has to rush to a doctor who treats him and administers medicines. After sometime man is restored to his original health enabling him to discharge his duties like before.

Medical profession has numerous jobs to offer. These are called doctors as a common term. Pathologists diagnose illness, Surgeons operate and remove unnatural growth or repair ailing parts, Gynaecologists treat women diseases, Dermatologists treat skin diseases, Paediatricians look after child diseases, Dentists remove or fill teeth, Ophthalmologists examine eyes and prescribe glasses, Cardiologists deal specifically with diseases of heart, Neurologists are concerned with diseases of nerves, Psychiatrists specialise in diseases of mind. All of these specialists are engaged in relieving patients of their various kinds of diseases. Afflicted people are indebted to these professionals.

The services of these specialists are so dominant that they create an impression that these are the only people who can save the ailing patients. It is understandably true that the role played by these people is invariably predominant. However, to think that these are the only people in the profession is a half truth. They are helped by some other people in discharge of their duties efficiently but remain behind curtains and hence beyond man's sight. Yet, services rendered by them are equally valuable as that of a doctor.

Young people enamoured by the services of a doctor think of entering into these professions unmindful of other openings in the occupations that make the work of doctors smooth and easy. The thought is stretched to the extent of thinking that everything is lost in case the prospective candidate does not qualify for a doctor's profession. That is the unhealthy attitude. Everybody cannot become a doctor of the kind that he fondles much because of limited seats available in training institutions as also the limitation of other qualifications that he possesses. There is absolutely no use in ruminating the lost chance or the chance for which he is not eligible. There are other openings that must be probed and thought to enter into. These openings lie in various subjects that have a tremendous bearing on the medical profession and medical practitioners. All of these openings are clubbed in one common word i.e. paramedical fields and the particular occupations are Pharmacist, Vaccinator, Medical Laboratory Technician, Compounder, Radiographer, Auxiliary Nurse, Nurse, Sanitary Inspector, Health Visitor, Dental Auxiliary, Physiotherapist, etc.

Many a youngman does not know about these occupations and hence does not try to get prepared and accept them as his prospective future career. Sometimes these occupations are looked down as inferior because of social or economic status of the family and accepting them would stake that false honour and dignity. This is absolutely wrong since each occupation has its own dignity and honour. Young people must remove such wrong considerations and think of these occupations also as their careers.

For information of young people details of these occupations are given below so as to make them aware of duties performed by these people and probable choice of careers for them.

1. Pharmacist. He is a worker who prepares medicines as per the prescription given by a doctor. In the process of preparing medicines he has to mix certain drugs, powders, syrups with a measured quantity to be given to patients. While delivering medicines to patients he gives hints about a mode of taking medicines and makes them aware of precautions that are to be observed. If he is an employee of a druggist's or chemist's shop he sells medicines as per prescription of doctors.

To become a fullfledged Pharmacist, a candidate has to obtain a diploma in Pharmacy. There are colleges of Pharmacy in each state which conduct courses in Pharmacy of a duration of one year. Qualification for admission to Pharmacy college for diploma course is a pass in secondary school certificate examination with science stream. The practice in vogue for admission in such colleges is to select candidates as per numbers obtained in the qualifying examination. Higher the number of marks obtained in the examination greater are chances of getting admission. Candidates should, therefore, bear in mind that they should work hard for securing good number of mark so as to ensure a seat in the college of Pharmacy.

Qualified pharmacists have good many employment opportunities in hospitals, dispensaries, pharmaceutical companies, drug manufacturing companies, chemists', or druggists' shops. There are also such opportunities in state Govts' drug Control Department as Drug Officer, Drug Inspector, etc.

For those who want to go for self-employment such opportunities can be procured for which Nationalised Banks offer credit facilities provided candidates manage to have site and proper license.

2. Vaccinator. A vaccinator's job is to inject proper category of vaccines into a human body depending upon the type of epidemic so that man can be saved of probable attack of disease. His main job is the prevention of disease rather than to cure it. Such vaccines are for preventing ugly and dangerous diseases like Small-pox, Tuberculosis, Diptheria, Tetanus, Cholera which once broke take a heavy toll of human life. There are special types of surgical needles, syringes, rotary lancets which the vaccinator uses while performing his job. Since he is to inject vaccines into human bodies, he has to be very discreet in giving them under most hygienic condition to ward off dangers of inoculating foreign matter.

To qualify for the job the vaccinator gets his training in a vaccine institute or a district level Govt. hospital and mostly civil hospital. The duration of training is just for six months stretching to one year. Boys who have passed their X Class are eligible to seek admission in the vaccinator's course.

Qualified vaccinators find jobs in Municipalities, Corporations, District Boards, Vaccine Institutes and Primary Health Centres. Their services are enlisted where dangers of outbreak of deadly diseases is there. They have to work under most adverse situations and at odd and lengthy hours. It must be remembered by these people that their help in this regard saves thousands of people from death. Hence, they have to give highest priority to their duties. He is definitely a small man so far as his occupation is concerned by rendering quite invaluable service to the community.

3. Medical Laboratory Technician. Infection is caused by a variety of bacteria. Entry of bacteria of various kinds spoils and upsets the system of human body. To allow a person his normal health, pathologists and physicians want to know the type of infection so that exact medicines can be prescribed. Stool, urine, blood, phlegma carry such bacteria. These discharges of human body are subjected to a test in medical laboratory to detect the type of bacteria and the extent of damage done by them. This is the work of a Medical Laboratory Technician. He collects samples from patients in clean bottles, examines them with the help of a microscope. During the process he is required to heat some items, add certain acids and medicines to find desired results.

Training in Medical Laboratory Technology can be obtained in medical colleges where such courses are run. Where women's polytechnics are located these courses are run there. Certain hospitals also conduct such courses. The duration of the course is of one or two years and qualification for admission is a pass in X Class with science subjects.

All the important hospitals, research institutes and private clinics have their attached laboratories where trained Medical Laboratory Technicians are employed. The job requires concentration. It also involves dirty works. If human life and values are considered uppermost, the hazards of the job do not become a hindrance in the profession. What is required of Medical Laboratory Technicians is an attitude of service which may give a lease of life to many suffering patients.

4. Compounder. His job is more or less of similar nature to a Pharmacist. Strictly speaking compounder's job is to dispense medicines, powders and tablets, administer injections as per doctor's prescription. He is sometimes incharge of a medical store and keeps an inventory of medicines and accounts.

He receives his training in a district hospital under supervision of a competent authority. Generally boys who have passed X Class are given training in the trade.

They are employed in hospitals, dispensaries and community and primary health centres. Each private medical practitioner employs a compounder to issue medicines as per his prescription, give injection, dress-up wounds etc.

5. Radiographer. Human body sometimes receives certain injuries, develops certain unwarranted growth, bones get fractured and hence need cure. All such things are detected by X-Rays. It is the job of a Radiographer to take X-Rays of parts of body that are damaged as per the directions of a doctor. As such radiographer has to handle X-Ray machine, adjust it and take the X-ray. He is also required to do radiotherapy or electrotherapy for curative treatment of certain diseases.

He is trained for two years. The training may be on the job or of certificate course or a diploma course in hospitals, medical colleges or technical institutes. He must have passed 10th Class with science subjects.

These trained people get employment in hospitals, medical research institutes and private clinics. He can open his own clinic and have a self-employment. He can seek credit from Nationalised Bank for the purpose.

6. Auxiliary Nurse. This is a job purely reserved for female candidates since it involves delivery cases. She receives training mostly on the job. The duration of such a course is of 1½ years and

candidate has to conduct a fixed number of delivery cases. During the period of training she receives stipend. The admission qualification is a pass in X Class. They are employed in hospitals especially in maternity homes and other private maternity clinics. They can have their own maternity clinics also as a self-employment.

7. Nurses. Nurses' main job is the care and treatment of the sick. They work under directions of doctors, administer medicines and injections, maintain a chart of temperature and pulse rate. They also look after carefully the needs and comforts of patients. Many times they are of greatest help to surgeons who take a variety of operations.

In many hospitals courses in Nursing are conducted which last for 2 to 3 years. Some courses lead to award of a B. Sc. (Nursing) degree which is of a duration of $3\frac{1}{2}$ years. The training is residential and free of cost. Trainees receive stipend also. Candidates who have passed 10th class with science subjects are eligible to admission in the nursing course. They get employment immediately after training in the same hospital where they completed the course or any other hospital. They are great in demand. As a nurse it is a hard life. They have to work in shifts and have to be vigilant about the condition of patients put under their charge. They have to report about the developments in the condition of patients to doctors so that they can give immediate and timely help to them. Devotion to duty is the sole requirement of this job.

8. Sanitary Inspector. Civilians, little knowing of the result of their action throw litter here and there which causes many diseases. Such dirt has to be lifted immediately before it causes any harm. Sanitary inspector is incharge of getting this dirt removed through sweepers who work under him. He goes round to ensure disposal of garbage, sprays DDT as an anti-malaria measure.

Training for Sanitary Inspector is given in a course of one or two years duration conducted by Municipal Authorities. Candidates who have done their X Class are admitted to the training course.

Employment is available in Municipalities, Corporations, and Zila Parishads.

9. Health Visitor. It is the Health Visitor who ensures and promotes health and welfare of women and children. A Health Visitor is mostly a female worker. She gives antenatal advice and guidance to expectant mothers.

She is trained for two years in an integrated training course during which she has to carry a specific number of delivery cases and attend instructions in a hospital. Candidates who have passed X Class are eligible for the course.

They get employment in Health Centres run by Municipal Committees, Corporations or Zila Parishads.

10. Dental Auxiliary. Dental Auxiliary/Mechanic helps a dental surgeon in all his operations. He keeps all instruments in hygienic conditions, cleans and polishes teeth, prepares various mixtures at the time of filling of teeth, prepares teeth plates by the process of heating, grinding, etc.

He has to undergo a two years certificate course of training in a dental college. Candidates who have done their X Class are selected for training.

Employment opportunities are available in dental hospitals, dental colleges and research institutes, dental clinics. They can also be employed by private dental doctors.

Candidates should contact the institutes mentioned above for further details.

11. Physiotherapist. Physiotherapy is a treatment of using exercise therapy and other therapeutic agents like heat, radiation, electricity, water and massage to cure weaknesses of muscles, limitations of movements in joints of shoulders, knees etc. A physiotherapist treats cases referred to him by a medical practitioner. Such cases include polio-cerebral palsy (damage to the motor centres of brain causing speech disturbances, muscular coordination), muscles, joint and bone injuries, chest and heart diseases. Occupational opportunities are available in hospitals or can start his own clinic.

To become a Physiotherapist a candidate has to undergo a diploma course of two years' duration after passing of 10+2 examination or its equivalent in Physics, Chemistry and Biology. The study includes subjects like Orthopaedics, Neurology, Medicine, Surgery, Physiotherapy and practical training in a hospital ward or department.

12. Occupational Therapist. It is a kind of treatment given through different activities like handicrafts, manual and industrial art, recreation and activities of daily living. The objective of such a treatment is to rehabilitate physically handicapped and mentally retarded persons through useful activities.

A diploma course in Occupational Therapy is of two years duration and candidates who have passed 10+2 examination in Physics, Chemistry and Biology are admitted to the course. The diploma course includes subjects like Anatomy, Physiology, Occupational Therapy and practical training in a hospital ward or department. Occupational opportunities are available in hospitals or can start his own clinic.

Courses in Physiotherapy and Occupational Therapy are available in few medical colleges/hospitals for which selection is made through competitive examination or merit in the qualifying examination.

Institutes which impart training in the trades mentioned above are :

1. Pharmacy. Duration 2 years, Qualification. X Pass with Maths and Science.

<i>Type of Institute</i>	<i>At</i>
Polytechnics	Kakinada, Hyderabad, Tirupati, Vishakhapatnam, Ambala, Bhopal, Jalgaon, Karad, Amaravati, Chandigarh, Delhi.
College of Pharmacy	Ahmadabad, Bombay, Pune, Bangalore, Raichur, Goa (Panaji)
Medical Colleges	Dibrugarh, Rohtak, Ernakulam, Calicut, Madras, Madurai, Vellore, AFMC Pune, Manipal, Cuttack, Sambalpur, Patiala, Amritsar, Jaipur, Kanpur, Allahabad.
Department of Pharmacy (Universities)	Waltair, Sagar, Nagpur, Bombay, Banaras, Calcutta, Chandigarh
Institute/Centre/Engineering College	Patna, Shimoga, Pilani, Karad, Jalpaiguri.

2. Dental Auxiliary

Course in: Dental Hygiene	Dental Colleges at Bombay, Lucknow, Trivandrum, Madras Medical College, Madras & AFMC, Pune
Dental Mechanic	Dental Colleges at Lucknow, Bangalore, Trivandrum, Madras Medical College, Madras.

3. Health Visitor. Health visitors' training is at Allahabad, Amritsar, Bangalore, Bareilly, Belgaum, Delhi, Gwalior, Hyderabad, Indore, Jaipur, Jodhpur, Lucknow, Ludhiana, Madras, Mangalore, Nahan, Patna, Rajkot, Vishakhapatnam.

4. Physiotherapy and Occupational Therapy

<i>Courses Offered</i>	<i>Name of the Institute</i>
Physiotherapy	Christian Medical College, Vellore
Both	Physio-occupational Therapy Institute, New Delhi
Both	All India Institute of Medical Sciences, New Delhi
Both	Medical College & Hospital, Nagpur
Occupational Therapy	Occupational Therapy Training School, Bombay

<i>Courses Offered</i>	<i>Name of the Institute</i>
Physiotherapy	School of Physiotherapy, KEM Hospital, Bombay
Physiotherapy	Central Leprosy Teaching & Research Institute, Chingleput
Physiotherapy	Catherine Booth Hospital, Nagercoil
Physiotherapy	Institute of Post-Graduate Medical Education & Research, Calcutta

5. Nursing

Colleges of Nursing one at Hyderabad, New Delhi, Trivandrum, Indore, Bombay, Chandigarh, Jaipur.

Lady Hardinge Health School, Delhi

Public Health Nursing School, Ahmadabad

Graduate School of Nursing, Indore

Christian School of Nursing, Medical College, Vellore

Govt. General Hospital, Madras.

Health School, Nagpur

AFMC, Pune

J. J. Group of Hospitals, Bombay

Leelabai Thakersey College of Nursing, Bombay

All India Institute of Mental Health, Bangalore

Bangalore Medical College, Bangalore

Lala Lajpat Rai Hospital, Kanpur

All India Institute of Hygiene & Public Health, Calcutta

6. Vaccinator, Radiographer, Compounder, Sanitary Inspector, Laboratory Technician.

<i>Courses</i>	<i>Name of the Institute.</i>
Vaccinator	National Small-Pox Eradication Programme Unit, Warangal
Sanitary Inspector, Lab. Technician	Andhra Medical College, Vishakhapatnam
Sanitary Inspector, Radiographer, Lab. Technician	Guntur Medical College, Guntur.
Sanitary Inspector Lab. Technician	Institute of Medical Sciences, Hyderabad
Radiographer	Karnool Medical College, Karnool
Sanitary Inspector Lab. Technician	Assam Medical College, Dibrugarh
	Rural Health Training Centre, Chabua
	Patna Medical College & Hospital, Patna

<i>Course</i>	<i>Name of the Institution</i>
Sanitary Inspector, Lab. Technician	Public Health Institute, Patna
Radiographer, Lab. Technician	Holy Family Hospital, New Delhi
Radiographer, Lab. Technician	Irwin Hospital, New Delhi
Lab. Technician	Vallabhbhai Patel Chest Institute, Delhi
Lab. Technician	Women's Polytechnic, New Delhi
Sanitary Inspector	Rural Health Training Centre, Ahmadabad
Radiographer, Lab. Technician	Medical College, Baroda
Lab. Technician	M.P. Shah Medical College, Jamnagar
Sanitary Inspector, Lab. Technician	Medical College, Srinagar
Radiographer, Lab. Technician	Medical College, Trivandrum
Lab. Technician	Medical College, Calicut
Lab. Technician	Women's Polytechnic, Bhopal
Compounder	Jackman Memorial Hospital, Bilaspur
Compounder, Radiographer	J.A. Group of Hospitals, Gwalior
Compounder	Christian Hospital, Indore
Lab. Technician, Radiographer	Ratlam Mission Hospital, Ratlam
Sanitary Inspector	Gandhi Memorial Hospital, Rewa
Lab. Technician	Central Leprosy Teaching & Research Institute, Chingleput
Radiographer	Catherine Booth Hospital, Nagercoil
Sanitary Inspector	Gandhigram Rural Institute, Ambathuria, Madurai
Radiographer, Sanitary Inspector	Christian Medical College, Vellore
Sanitary Inspector, Radiographer	Madras Medical College, Madras
Sanitary Inspector	Madurai Medical College, Madurai
Sanitary Inspector, Lab. Technician, Radiographer	Stanely Medical College, Madras
Lab. Technician	Medical College, Aurangabad
Lab. Technician	Haffkin Institute, Parel, Bombay

<i>Course</i>	<i>Name of the Institution</i>
Vaccinator	Vaccine Institute, Shradhanand Peth, Nagpur
Sanitary Inspector	Public Health Institute, Nagpur
Para-medical Worker, Radiographer, Lab. Technician	Gandhi Memorial Leprosy Foundation, Wardha B.J. Medical College, Pune
Lab. Technician, Radiographer	Grant Medical College, Bombay
Lab. Technician, Radiographer	Medical College & Hospital, Nagpur
Lab. Technician, Radiographer	Miraj Medical College, Miraj
Compounder, Lab. Technician	E. T. C. M. Hospital, Kolar
Radiographer, Lab. Technician	Holosworth Memorial Hospital, Mysore
Lab. Technician, Radiographer	K.R. Hospital & Krishnarajendra Hospital, Mysore
Compounder, Radiographer	Govt. Menlock Hospital, Hanpankatla, Mangalore
Lab. Technician	Kasturba Medical College, Manipal
Sanitary Inspector	Medical College, Burla
Lab. Technician, Radiographer	Ramchandra Bhargo Medical College, Cuttack
Sanitary Inspector	Birla Medical College, Sambalpur
Lab. Technician	Philadelphia Hospital, Ambala
Vaccinator, Lab. Technician	The Dean of Hygiene & Vaccine, Amritsar
Lab. Technician	Machbert Hospital, Dhariwal, Gurdaspur
Lab. Technician	Medical College, Rohtak
Lab. Technician, Radiographer	Christian Medical College, Ludhiana
Lab. Technician	Govt. Medical Collc, , Patiala
Lab. Technician	Medical College, Amritsar
Rodiographer, Compounder	P.B.M. Hospital, Bikaner

<i>Course</i>	<i>Name of the Institution</i>
Sanitary Inspector Radiographer, Lab. Technician	Vidya Bhawan Rural Institute, Udaipur Medical College, Agra
Para-Medical Worker	Training Centre for Para-Medical Work, Hatonda
Lab. Technician, Radiographer	Clara Sevain Hospital, Bareilly
Sanitary Inspector	Provincial Hygiene Institute, Lucknow
Radiographer, Lab. Technician, Sanitary Inspector	State Medical Faculty, Sada, Lucknow
Lab. Technician, Radiographer	Institute of Post-Graduate Medical Educational Research, Calcutta.

CHAPTER 14

CAREERS IN SERVICE OCCUPATIONS

With evolution of man his efforts are directed to make his life comfortable to the extent possible. The process of advancement brought a steady change in his life style. Initially he was not dependent on others as his needs were few but later his needs increased quite in good number which made absolutely impossible to satisfy them by himself alone and forced him to depend upon others. This became a continuous process through which many occupations came into existence. A boost to this process was given during the Industrial Revolution of the 18th Century which paved way for specialization, modernization, automation creating a number of occupations. Because of this there came a band of workers doing specialised jobs presumably to satisfy the needs of man. Persons who satisfy needs of man through such occupations have been labelled as service people and their occupations as service occupations because they serve to satisfy peoples' needs.

Many people make a difference of rural and urban and say that because of urbanization man's dependence on others came into being. It is not so. It is true that because of attraction of city life and less number of occupational opportunities in rural areas, peoples' exodus to cities is unprecendental. They crowd cities and make problems of city dwellers in matters of housing, transport, education, food, sanitation quite difficult. Because of urgency to reach his work site he needs somebody to wash his clothes and press them, he wants somebody to serve him food at his worksite, wants somebody to cut his hair, wants help of somebody to know about historic or important places in the city or around it, wants his outfits to be tailored by others to present a smart look. There may be a difference of degree rather than of kind in the nature of dependency between two atmospheres of rural and urban areas, but there is a dependency in the rural areas too since they also want to satisfy their needs through the service of others.

In fact each man works to serve other man directly or indirectly. A radio mechanic works in a radio company to earn his bread as well as to satisfy a need of other person working in a bicycle factory to hear music or news. However, there is no direct relationship between the two and hence, they are not deemed to be service occupations. The service occupations are those which

assist, tend and wait upon for other persons. Such occupations are House-keepers, Matrons, Stewards, Cooks, Waiters, Bartenders, Maids in hotel industry; Building Caretakers, Sweepers and Cleaners in offices, Launderers, Dyers, Dry-cleaners and Pressors, Hair Dressers, Barbers, Beauticians, Guides, Travel Agents, Tourist Guides, Models and Fashion Models, Air Hostesses, Flight Pursers, etc.

Many of these occupations have been described under the appropriate places in this book and they have not been covered in this chapter. Again some of them cannot be termed as careers but simply occupations and hence they too have not been covered here. We will restrict our coverage of those occupations to Travel Agents, Tourist Guides, Building Caretakers, Dry-cleaners, Dyers, Launderers, Garment Designers, Tailors, Hair Dressers, Beauticians, Masseurs, Manicurists, Makeupmen, Barber, Models and Fashion Models, etc. First of all we will consider what type of work they discharge and then requirements for accepting these occupations as careers and employment prospects therein.

1. Travel Agent. He plans travels to historical places, places of religious importance, and recreational value and provides related information and arranges accommodation, food and other facilities for tourists—foreign or local. He devises routes of travel, works out time schedule, limits travel baggage and rates thereof. He plans itinerary of travel, handles travel baggage, makes reservation of passage and accommodation in advance and provides services of tourist guides for giving correct information about sight-seeing, shopping, recreation, etc., which enables travellers enjoy their trips.

2. Tourist Guide. His duties are to guide tourists and visitors to places of interest and explain their historical background and importance. He accompanies tourists on their excursions to and around places of tourist interest and explains historical, cultural, social, religious and architectural significance of monuments. He answers queries of tourists regarding various economic and social aspects of life of people and assists them about shopping. He also narrates interesting anecdotes or interesting stories connected with monuments, personalities to create interest among tourists and enable them really to enjoy their trips and add to their information.

3. Building Caretaker. He takes care of houses, buildings, offices, institutions and maintains them in an orderly manner and keeps them clean and tidy. In addition, he looks after buildings and furnishing of clubs, schools, offices, flats and private houses and arranges for their cleaning and repairs.

4. Dry-Cleaner. His duties include drycleaning of silk or woollen garments, textile furnishings, leather goods and such other articles by hand or machines, using chemical solutions or other

solvents. He also performs other functions such as removing stains and spots from garments, pressing of garments by hand iron or on a steam pressing machine etc.

5. Launderer. He cleans garments and other articles of washable fabrics by hand or on a machine and performs other related functions such as marking and sorting of garments, preparing washing solutions of required strength etc.

6. Garments Designer. He prepares new designs for garments using cotton, woollen, silk, terylene or polyester cloth, leather or other material. He also supervises their stitching, embroidery and finishing. He often specialises in particular types of garments, such as ladies, apparels, children's clothing, gents suits etc.

7. Tailor. He stitches clothes and often specialises in stitching of particular types of clothing such as ladies garments, children's clothing, gents woollen suits, shirts etc.

8. Hair Dresser. He cuts, shapes, washes, dyes and curls hair in various styles as per the choice of customers. While doing this he uses clippers, scissors, razors and combs. He also dyes hair. He advises clients on care of hair and their treatment on falling hair and hair diseases, suggests use of wigs etc.

9. Beautician. She gives various forms of beauty to clients and examines clients' skin to suggest suitable treatment. She applies lotions, creams and various types of facial packs to stimulate circulation, lubricate tissues and remove wrinkles. She steams, cleans and massages face, scalp, neck, arms and other parts of a body using special creams, vibrators and gadgets, revitalises skin and gives treatment for pimples; gives slimming exercises, steam baths and treatment for reducing obesity or trimming waist and hips into shapes using various mechanical and electrical gadgets; removes superfluous hair by hot or cold wax treatment, treats eyebrows and eyelashes, applies cosmetics and facial make-up for special festive occasions.

10. Masseur. He massages by hand or vibrating machines various parts of a body to tone up muscles or to reduce fat from various parts of body.

11. Manicurist. He cleans, shapes and polishes finger nails, applies liquid polish remover or lotion to clean nails, advises customers on massage and use of cream to improve appearance of hands and arms. When he performs similar operations on feet or cuts or treats corns he is known as pedicurist.

12. Make-up man. He applies make-up to faces of actors and other performers of film studio, TV or stage productions.

13. Barber. He cuts hair, shaves and trims beards and mustaches of men according to instructions of customers or according to a particular style, performs other personal services such as shampooing, massaging of head or body etc.

14. Model. He or she poses for painting, drawing or clay modelling according to directions of an artist modeller, sculptor or photographer in a suitable position or pose.

15. Fashion Model. He models garments and accessories such as jewellery, footwear, cosmetics, handbags for display to designers and customers, dresses in a sample garments, turns and walks to demonstrate features such as quality, style and design to observers at fashion shows.

Qualities Required

Most service occupations require dealing with people and hence, people in these professions should have a pleasant temperament and should have to observe considerable patience so as not to get perturbed by complaining of fastidious and difficult clients. According to the dictum 'Customer is always right', service workers have to render service with a smart smile.

Hair dressers, barbers and beauticians should possess finger and manual dexterity since they have to make use of their hands and fingers quickly and dexteriously. Again they should not be careless but should possess an ability to work with precision. Tourist Guides, Hair Dressers and Beauticians should have to maintain poise, balance and control of their feelings even in the most provoking situation which is called emotional stability. Tourist Guides, in addition, should have to use words clearly and distinctly to make out their point while explaining facts to tourists. Beauticians, hair dressers and models must possess creative and artistic ability for bringing innovations in styles to attract customers. Models should have an eye for colour discrimination.

Most of the service workers require to stand constantly for long hours which requires good and sound physique. Muscular strength is an asset to the Masseurs.

Training requirements for these occupations are given in a table at the end of this chapter.

Employment

All of these service occupations are concentrated in big cities where choosy customers are available. Most of the jobs are available with sophisticated institutions like five star hotels, theatre companies, TV centres, beauty saloons Barbers can find jobs in barbers' saloons; Caretakers in housing estates, housing companies both in public and private sectors hospital, boarding houses and hotels. Tourist Guides are employed by tourist agencies, travel agents, air companies, exhibitions, trade fairs, international conferences, places of tourist interests etc. Models are employed by advertising agencies, photographers, commercial artists, textile firms, manufacturers of garments and other fashion goods.

Institutions Offering Courses in Various Service Occupations

<i>Course</i>	<i>Qualification</i>	<i>Age</i>	<i>Duration</i>	<i>Institutions</i>
Beautician & Hair Dresser (Certificate)	X Class	16-25	1 Year	Industrial Training Institute for Women, Curzon Road, New Delhi.
"	10+2	Minimum 16 Years	1 Year	New Delhi Polytechnic for Women, South Extension, New Delhi.
Beauty Culture & Hair Dressing (Diploma)	10+2	16-21	2 Years	Women's Polytechnic, Kashmir Gate, Delhi.
Cosmetology & Beauty Culture (Diploma)	10+2	16-21	1 Year	Women's Technical Training Institute, YWCA, Ashoka Road, New Delhi.
Cosmetology (Diploma)	10+2	No age limit	1 Year	Government Polytechnic for Women, Adyar, Madras.
Cosmetology, (Certificate—Part-time)	X Class	"	3 Months	" "
Tourism	Degree	—	1 Year	Andhra University, Waltair
B.A. (Tourism)	10+2	16 Years	3 Years	College of Vocational Studies, Gole Market, New Delhi.
Tourist Guide	Degree	Not prescribed	3 Months	Government of India, Ministry of Tourism & Civil Aviation, Transport Bhavan, New Delhi.
Tourism (Diploma)	Degree	Not prescribed	1 Year	Deptt. of History & Ancient Indian Culture, Marathwada University, Aurangabad.

<i>Course</i>	<i>Qualification</i>	<i>Age</i>	<i>Duration</i>	<i>Institutions</i>
Travel Agency Work (Certificate)	X	30 Years	1 Year	Sophia College, Basant Kumar Somani Polytechnic, Bhulabhai Desai Road, Bombay.
Interior Decoration (Diploma)	10+2	16 Years	3 Years	Women's Polytechnic, Kashmere Gate, Delhi.
Interior Designing and Decoration (Diploma)	Certificate in Decoration	—	1 Year (Part-time)	Sophia College, Basant Kumar Somani Polytechnic, Bhulabhai Desai Road, Bombay
"	X	—	1 Year (Part-Time)	" "
Interior Decoration (Diploma)	X	—	3 Years	Government Polytechnic for Women, Chandigarh.
Costume Designing (Diploma)	X	—	3 Years	Government Polytechnic for Women, Guntur.
"	X	—	3 Years	Kamala Nehru Polytechnic for Women, Hyderabad.
"	X	—	—	Girls' Polytechnic, Gauhati.
Dress Making (Certificate)	X	16-25	1 Year	Industrial Training Institute for Women, Kasturba Gandhi Marg, New Delhi
Cutting & Tailoring (Certificate)	X	"	"	"
Embroidery (Certificate)	X	"	"	"
Dress Designing (Certificate)	X	"	2 Years	New Delhi Polytechnic for Women, South Extension, New Delhi.
Tailoring (Certificate)	"	"	"	"

Costume Designing (Diploma)	X	No age limit	3½ Years	Government Polytechnic, Navarangpura, Ahmadabad.
Embroidery (Certificate)	VIII	"	1 Year	"
Tailoring (Diploma)	VIII	"	"	"
Costume Designing (Diploma)	X	15 Years	3 Years	Government Polytechnic for Women, Hubli.
"	"	"	"	Polytechnic for Women, Bangalore.
"	"	14 Years	2 Years	Women's Polytechnic, Calicut.
"	"	—	2 Years	Women's Polytechnic, Trichur.
"	"	—	2 Years	Women's Polytechnic, Trivandrum.
"	10+2	—	3 Years	Government Women's Polytechnic, Bhopal.
"	X	14 Years	2 Years	Government Girls' Polytechnic, Lucknow.
"	X	—	3 Years	University Polytechnic, Aligarh Muslim University, Aligarh.
Laundry Technology (Certificate)	VIII	13-17 Years	3 Years	Technical High-school, Central Poly- technic, Adyar, Madras.
Architecture (Diploma)	10+2	—	3 Years	Kamala Nehru Polytechnic for Women, Hyderabad.
"	X	18 Years	7½ Years (Part-time)	School of Planning & Architecture, Indraprastha Estate, New Delhi.
"	10+2	16 Years	3 Years	Women's Polytechnic, Kashmere Gate, Delhi.

Course	Qualification	Age	Duration	Institutions
Architecture (Diploma)	X	—	3½ Years	Government Girls' Polytechnic, Surat.
"	X	—	"	Government Polytechnic for Girls, Navrangpura, Ahmadabad.
"	X	—	2 Years	Government Women's Polytechnic, Bhopal.
"	X	—	5 Years (Full time) 7 Years (Part-time)	Abhinav Kala Vidyalaya, Tilak Road, Pune.
"	X	—	5 Years	Academy of Architecture, Prabha Devi, Bombay.
"	X	—	7 Years (Part-time)	Shri J.J. College of Architecture, Dr. D. N. Road, Bombay.
"	X	—	3 Years	Government Polytechnic for Women, Chandigarh.
"	X	14-21 Years	3 Years	Government College of Art & Craft, Tagore Marg, Lucknow.
"	X	15-20 Years	3 Years	Women's Polytechnic, 21 Convent Road, Calcutta.

However, paid employment opportunities are very few but self employment opportunities are more. Beauticians, tailors, dry-cleaners and launderers, hair dressers, barbers, garment designers can open their own shops. They can get financial assistance from banks. The earnings are good if services are provided to the satisfaction of customers.

CHAPTER 15

CAREERS IN PRINTING INDUSTRY

The invention of printing methodology has revolutionised the process of learning. Printed words are the principal means of communication of one's thoughts, ideas, concepts and hence the art of printing proved to be a chief instrument for rapid spread of knowledge in every field: be it literature, medicine, engineering, technology, science and industry. Therefore, the art of printing has been termed as the 'Mother Art of Civilization'. This printing industry is involved in printing of books, periodicals, newspapers, stationery, business forms etc. It requires invariably the help of photography also.

Employment in the industry is quite good. The principal employers of printing personnel are Central and State Governments which have their own printing presses for printing all types of publications such as periodicals, bulletins, journals, books, pamphlets, forms and stationery required for Government's use. Private commercial presses are next to Governments to offer large-scale employment to printing workers. These presses accept jobs of printing of any kind such as wedding cards, hand bills, invitation cards, visiting cards and such other works from private parties and also Government work. The third larger employer is the newspapers which are quite good in number. There are a number of publishing houses which publish books of general interest as also for schools and colleges, technical books, periodicals and greeting cards. A good number of employees are engaged by these houses.

The printed material that comes to us in the form and shape involves a very complicated process. We do not feel the rigours and labour that are behind preparing such material because all this is borne out and faced by the people who work in this industry. The matter that is supplied to customers goes through three important processes of composing, plate making and printing. However, many books require illustrations, maps, pictures, photographs alongwith modern processes of printing. Printing is also of various types and forms. It may be of books, magazines, journals, newspapers, posters, handbills, invitation cards, pamphlets each requiring different kinds of operations. Therefore, occupations, that are available in the printing industry can be divided into six groups or departments as composing room occupations, photo engraving and block-making occupations, electrotyping and stereotype occupations, lithographic occupations, machine room occupations and book-binding and packing occupations.

Each of these departments requires skilled services of trained personnel. In addition to these skilled workers of craftsmen engaged in printing industry there are several occupations at middle level managerial level and executive level occupations each requiring professionally and qualified persons. However, these have not been included here because such occupations have already been described elsewhere in this book. This industry also engages another kind of workers who are common to all industries such as electrical staff, accounts workers, salesmen, etc., who also do not require elaboration here.

Printing Process

There are various methods of printing. Admittedly printing is a means of transferring ink impressions of composed matter—may be letters, photographs, designs and illustrations from a press metal plate to paper, metal or such other suitable metal. Three basic printing processes that are generally followed are: 1. letter press printing, 2. lithography, and 3. Gravure Printing each of which requires specially trained personnel for doing the job.

1. Letter Press Printing. This is the oldest method and most commonly used in the printing presses. In this process the letters or designs that are to be printed are raised above the non-printing areas of the type or press plate. When actual printing is done, ink is applied only to the raised areas of the plate and then the printing is done manually or by machine.

2. Lithography (also called Offset Printing). In this process both the matter to be printed and other areas of the plate are on the same level. This method is based on a principle that water and grease repel together. Lithographic process is quite commonly used for printing calendars, maps, posters, and for printing on metal and rough paper. This method is specifically suited for multicolour artwork.

3. Gravure Printing. It is of two types. One is Roto Gravure which adopts photographic techniques in the preparation of a plate from picture and type for processes of printing of illustrated magazines. (2) Other is Hand Gravure used for printing from a flat copper plate stationery, letterheads and greeting cards etc.

Printing Occupations

Whatever the method of printing being used, most of the printing work passes through three principal stages viz., composing, plate-making and printing if the matter is just simple without illustrations, involving colour combinations photographs or pictures. If all these are to be included which is often times done some more stages of printing are involved. There are in all, therefore, six processes of printing if every aspect is to be printed. They are:

1. Composing,
2. Photo-engraving,

3. Electrotyping and stereotyping,
4. Lithography,
5. Machine-room operations, and
6. Bookbinding and packaging.

Apart from the actual workers who are involved basically in printing industry, there are other sets of workers looking after repairing work in the printing presses. Hence, occupational opportunities of such people are not considered here since these have been mentioned elsewhere in this book.

The six processes mentioned above and the occupational opportunities that are available in the printing industry have been described below in brief.

1. Composing. Printing by letterpress process starts in the composing room. Compositors compose the matter as per the manuscript provided to them by using types of letters each type having one letter. This art involves setting such types and lines with equal space in between words. Types are available in different sizes, shapes and designs. Composing is done by using these different types for composing matter, tabular matter. These types are kept in a particular order for their easy location in a tray. Employees involved in composing matter are called as compositors, type-setters of different variety such as Lino-type Operators, Monotype Operators, Keyboard Operators, Monotype Casters, Teletype Setters, Photocompositors and Proof Readers, Copy Holders, Lock-upman, Make-upman, Distributor.

2. Photo-Engraving. In this section photo-engraving plates for illustrations, pictures, maps, charts and other material are made. The entire job may be done by a single person or can be divided into a number of skilled workers such as Photo Engravers, Printers, Etchers, Finishers, Cameramana, Routers, Mounters, Proofmen, etc. Photo-engraved plates are also man called blocks.

3. Photo-Engraving Division. Most large printing jobs require use of duplicate printing plates as for example when a large edition of a book or magazine is printed, several plates are used one after the other to replace those which become too worn out to give good and clear impressions. The duplicate printing plates are prepared by Electrotypers and stereotypers.

4. Lithographic Division. Lithographic method is generally used for printing office and bank stationery, stock and share certificates, paintings, and pieces, magazine covers, book jackets, calendars, charts, posters, drawings, maps, display cards, children's books, text-books, advertising literature, artistic labels and cartoons. It is essentially a method of producing a copy in colours.

There are four main departments in lithographic printing press. They are: photo, art, plate making and printing. Naturally,

persons who are skilled in these processes are required to be appointed. These workers are called Photo-lithographer, Photographic Retoucher, Lithographic Artist, Stone-Engraver, Ben-day Artist, Opaquer, Tuscher, Photo-plate Maker, Proofer, etc.

5. Machine Room. The actual printing operation is done in this room. It is in this room type forms from composing room, plates from process department, roto gravure and lithographic plates are assembled and made ready for printing. Different types of machines are used for printing purposes. The workers in this room are called Pressmen, Machineman of different categories of Platen Machine, Cylinder Printing, Hand Printing, Automatic Printing and Rotary Printing. Their job is to instal a plate on the press, adjust and press for proper printing.

6. Book-Binding. The printed items like books, magazines, pamphlets require to be sewn, stapled, stitched or bound. This is the job done by Book Binders. Binding is of many types—which involve operations such as assembling printed sheets, adjusting, folding, stitching and glueing them for which separate workers are appointed. They make use of fabric, cloth, rexin, leather, cardboard for binding purposes. After all these operations the matter goes to the readers in a complete form.

As in other craftsman trades, there is a feasibility of engaging apprentices under the Apprentices Act, 1961 as per its requirements.

Occupational Hazards

Most printing occupations are termed as 'blue collar' jobs. Because of the nature of work workers' clothes and hair's get dirty with grease and ink; various operations in the press are of repetitive nature and therefore monotonous. Handfeeding of paper to machines, unloading it or piling and finishing it involve certain injuries also. They are also exposed to cleaning fluids, vapours, odours of lead fumes, acids, solvents and other chemicals which may cause irritation and skin diseases and respiratory ailments. Proof reading and composing especially of small types may cause eye strain.

Appointments to the lower grades is made through Employments Exchanges if the employer is Government but private sector employers choose their own methods of recruitment. Appointments to middle level posts of Foreman, Assistant Works Manager, Assistant Manager are made through promotions. Supervisory posts and executive posts, in some cases, are filled through Union Public Service Commission or State Public Service Commissions.

Following are certain avenues of promotion in the printing presses : Section Holder, Foreman, Gold Finisher, Head Mechanic, Junior Artist, Senior Artist, Labour Supervisor etc.

Table Indicating Training Facilities in Printing Technology

<i>Sl. No.</i>	<i>Institutes</i>	<i>Courses</i>	<i>Qualification</i>	<i>Duration</i>	<i>Age</i>
1.	Northern Regional School of Printing Technology, Allahabad	1. Diploma in letter press Printing	10th	3 Yrs (Regular) 5 Yrs (Part-time)	—
2.	School of Printing Technology New Delhi	2. Diploma in Lithography	"	"	No Age Limit
		1. Diploma in Printing & Graphic Art. Separate for Printing Students and Commercial Photography Students	"	"	"
		2. Refresher Courses in Letter Press Printing, Mechanical Composition, Litho Art Works & Retouching, Photo Mechanical Presses Design & Layout, Basic Electrical & Mechanical Engineering for Printers, Business Management & Administration for Printers, Printers' Science etc.	"	6 Months	"

3.	Regional School of Printing, Madras	1. Diploma in Letter Press Group	"	3 Yrs + 1 Yr Apprenticeship	"
		2. Diploma in Lithography Group	"	5 Yrs Part-time for Apprentices/Working Craftsmen	"
		3. Certificate course in Hand Composing	"	Apprentices/Working Craftsmen	"
4.	School of Printing Technology, Bombay	1. Diploma in Letter Press Printing	"	3 Yrs—Regular	2 1/2 Years
		2. Diploma in Photo-offset Printing	10th with PCM	4 Yrs—Part-time	"
5.	Spicers Memorial College, Pune	1. Degree in Graphic Art (Printing)	10th	4 Years	16 Years
		2. Diploma in Graphic Art (Printing)	"	2 Years	"
6.	Govt School of Printing Technology, Sharanam (Kerala)	1. Diploma in Letter Press Printing	"	3 Years	"
		2. Diploma in Lithography Printing	"	"	"
7.	Kala Niketan, Jabalpur (M.P.)	1. Diploma in Hand & Machine Composing	"	"	"
		2. Diploma in Letter Press Printing	"	—	"
		3. Diploma in Book Binding & Packaging	"	—	"

Sl. No.	Institutes	Courses	Qualification	Duration	Age
8.	Jaichamrajendra Polytechnic, Mysore	Diploma in Printing Technology	X	3 Years	10 Years
9.	M.H. Saboo Siddik Technical Institute, 8 Shepherd Street, Byculla, Bombay-8	Certificate in Composing (Advanced)	X	3 Years	"
10.	Maharashtra Mudranshala, 1786, Sadashiv Peth, Pune-2	1. Advanced Certificate in Composing 2. Advanced Certificate in Printing 3. Craftsman Course in Hand Composing 4. Craftsman Course in Letter Press Printing	X VII VII "	" 1 Year " "	" " " "
11.	K.E.S. Topiwala Industrial School, Alibag, Distt. Kolaba (Maharashtra)	Certificate in Composing	"	"	"
12.	K.E.S.K. High School, Panvel (Distt. Colaba) Maharashtra	"	"	"	"

13.	Topiwala Memoria Technical School, Sawantwadi (Distt. Ratnagiri), Maharashtra	"	"	"	"
14.	Howrah Home, Sibpur, Howrah (W.B.)	"	"	"	"
15.	Phulia Polytechnic, Phulia, 24 Paraganas (W.B.)	"	"	"	"
16.	National Institute of Design, Paldi, Ahmadabad	1. Diploma in Graphic Design	X with English, Higher Maths, Physics, Chemistry	5 Years	—
17.	Industrial Training Institutes (almost in all the Institutes) all over India (Ad- mission in the month of August)	2. Diploma in Typography 1. Certificate in Printing Machine Operator 2. Certificate Course in Hand Composition and Proof Reading	" VIII X with English & Regional Languages	" 1 Year 1 Year	— 14 Years "

There are very few opportunities for self-employment except that establishing one's own press investment in which is quite heavy. However, under several plans of self-employment entrepreneurs can get credit from banks and other financial bodies to set up an enterprise.

For preparing trained and skilled workers there are institutions set up by the Govt. A list of these institutions is given in the accompanied table with the type of training offered, qualifications required for admission, duration of the courses and required age-limit. Candidates are advised to get in contact with the original source for detailed information.

CHAPTER 16

CAREERS IN ECONOMICS

Economics deals principally with money, its inward and outward flow which in other words means income and expenditure. However, it will be wrong to assume that economics deals with this limited role. It has a wider spectrum to cover hence, it has rightly been defined as 'the science dealing with production, distribution and consumption of goods and services'.

In economics we often hear one term *i.e.* Gross National Productivity which is taken to be an indicator of national progress. When we talk of national progress it is not confined to people's monetary status but it covers overall status of a person. Modern economics has become a complex subject because it now deals with multifarious socio-economic and financial matters of an individual as well as of society. It studies systematically and methodically the economic network of society including agriculture, business, money and banking, international trade, transportation, planning, growth and development. Because of such an intimate relationship with nation's developmental aspects economics has become an integral part of other subjects like chartered accountancy, cost accountancy, operational research, industrial relations, labour relations, social administration, economic administration, business administration, industrial administration, statistics, sociology, public administration, social work and social welfare which cumulatively contribute to the gross national productivity.

Study of economics has now assumed great importance as the activities of modern society cannot be comprehended in isolation. It has close links with production, management and distribution of goods and services of a variety of nature not only at national but also international fronts. Economists are constantly engaged in analysing and interpreting of a number of economic phenomena occurring at a rapid pace and influencing all aspects of human life. The growth of industries, expansion of business and all-round economic advancement made it compulsory to take decisions intelligently and fairly quickly. At this critical juncture economists come forward and contribute substantially to arrive at decisions.

Because of such dimensional sweep economics has opened a vast number of employment opportunities.

Education in Economics

It is not much of relevance of the study of economics at the school stage, however study of it at sufficiently higher level of education has much to contribute. At the college level the subject of economics can be studied for different courses. A student can offer this subject for his graduation in different capacities as main or subsidiary subject. Post-graduation and doctoral degrees can also be done in economics. All these courses of graduation or post-graduation level can be done in almost all the Indian Universities or in colleges affiliated to the universities. However, some universities also conduct diploma courses in economics.

Research facilities are also available in various branches of economics. For such research candidates must have a master's degree in economics. Economics has a wide application and hence organisations of different varieties offer facilities of specialised training in applied economics. For example, Agricultural Economics is an applied branch of economics and is being taught in Agricultural Universities. It is also a subject for qualifying certain other professional examinations such as accountancy, chartered accountancy, business management, industrial relations, labour welfare, social work, statistics, sociology, anthropology, demography, geography, etc. Besides these fields some other courses are also available in business economics, management economics, etc. Persons specialised in various branches of economics like money, banking, insurance, public finance, foreign exchange, labour problems, foreign trade find lucrative job positions. There are also correspondence courses in economics conducted by many universities.

Economics has become increasingly statistics oriented because of a trend of application of statistical and mathematical methods. Knowledge of economics is also useful in some other professional courses like advertising, marketing, store-keeping, salesmanship, business correspondence, public relations, works management, personnel management, sales management, industrial management etc.

Occupations in Economics

Modern economic methods have wider applications. With the increase in national and international economic, industrial and commercial transactions, a variety of occupational opportunities have been thrown open for trained people in economics.

As usual the largest single field which offers employment to economics degree holders is the education field in the capacity of teachers, lecturers, readers and professors. At school level a degree in teaching *i.e.* B. Ed. is considered to be an essential qualification to become a trained teacher. Recruitment to these posts is made through the Employment Exchanges and through advertising posts in leading newspapers.

Besides educational field for employment there are numerous fields which offer a variety of job opportunities of employment to

the personnel trained in economics. Few of these occupations are described below.

Applied Economist

Economists have proved their worth in applied field of economics. With the beginning of the planning era it has become necessary to have timely and reliable and adequate data. For framing of schemes and developmental programmes, a continuous effort has to be made to procure, analyse and interpret such data. For this purpose there are many organisations which undertake such jobs. They employ persons trained in economics to do the job. Economists apply knowledge of economics to financial problems of the country and arrive at conclusions which can be used in bettering the lot of masses and also preparing expansion schemes for agriculture and irrigation, trade and commerce, social welfare and industrialisation. Economists may work in Government offices as well as private organizations.

Economists also study particular problems like growth of population, planning and urbanization. Study of population problems form a vast subject like data on age, fertility pattern, data on growth on population, density of population, economic effects of population rise etc. They also get employment in planning boards, development institutes, financial institutions/organizations, investment boards, institutes of growth and economic research, institutes of population studies, census organization, etc.

Agricultural economists study problems relating to exploitation of agricultural resources, irrigation facilities, land reforms and legislation, rural indebtedness etc. Their important work is to maintain agricultural production statistics and forecast production and consumption of agricultural produce. They also suggest ways and means of improvement in agriculture. Bureau of statistics and economic agricultural research bodies also employ economists.

Financial economists study trends in price fluctuation and suggest remedial measures to solve problems. They study impact of taxes on the economic growth of the country. They study working of monetary systems, value of currency, exchange trends and suggest ways to maintain profitable exchange for foreign currencies. They also examine smooth functioning of banks, financial corporations, banking organizations.

Procedures and techniques for regulating these organizations and suggesting improvements of their working is the work of the Financial Economists. Research into lending and borrowing of capital, suggesting profitable investment, fixation of rate of interest and discount rates are also looked by these economists. They are employed by development and co-operative banks, lending, financial and investment corporations.

International trade is another field where financial economists are required because its operations are very complicated necessita-

ting ingenuity, knowledge of statistical methods as well as balance of trade. That is the work of the economists specialised in international trade. They collect and maintain statistical data and make suggestions in regard to favourable trade of the country. They also keep in touch with latest trends in the world market and advise trading departments to undertake foreign trade of those commodities which have international market. They predict future demands of goods and study possible fluctuations in supply of rare commodities. These people are employed by promotion councils. Indian Institute of Foreign Trade, New Delhi imparts instructions in various facets of international trade. It organises short-term as well as long term courses.

Labour Economists look after labour problems of the country. Such problems may be of the nature of volume and texture of labour force, changes in its ingredients that take place occasionally, systematic and scientific study of trends in demand and supply of labour force, labour legislations on social insurance, industrial accidents, trade union activities, industrial disputes, strikes, lock-outs, etc. They also are related to study of trends in employment and unemployment in the labour market of skilled, semi-skilled and unskilled workers occupationwise, industry or sectorwise. They prepare, compile and interpret data relating to employment market and man-power needs of specific industries or occupations. They undertake study of wage structures, income policies etc. They are employed by labour commissioner's office, labour institutes, labour tribunals and labour research institutes, etc.

All the public sector and private sector industrialists appoint Industrial Economists to study problems of industrial workers employed by them in relation to the general industrial policy legislations enacted by Governments. They also study market trends of production, conduct market research of selling methods and suggest ways and means to increase sales of the products. They conduct surveys to find out market trends for the goods being produced, comprehend change in people's tastes, styles and fashion and investigate scope for new commodities. This sort of information is collected through field investigators who work under their supervision. Surveys are done through personal interviews, printed questionnaires or even by personal observations. They prepare tabulations of data received, interpret them and arrive at certain conclusions, prepare reports, briefs and drafts which are supported by charts, tables, graphs appendices and other modes of illustrations. The findings of such surveys are applied on a larger scale for promoting a new product or redesigning the same product through innovations.

Persons trained in economics are employed in large number as statistical officers, assistant directors, superintendents in state bureaux of statistics and economics. At the lower rung of the ladder these people are employed as investigators, statistical

assistants, inspectors, research assistants, technical assistants. They perform the jobs as per the directions of the economists.

Since statistics and economics are increasingly go into one another's field, economists often deal with statistical formulae, figures and mathematical tabulations. To do this accurately and exactly economists are required to have knowledge of both the subjects. With the knowledge of both the subjects economists can successfully predict future economic situations and help planners develop programmes and schemes.

The highest post under the Government is of Chief Economic Advisor who gives his advice to the Ministry of Finance on various problems concerning economy of the country.

Openings for qualified economists lie in Government Sector—both Central and State Governments, public sector undertakings, local bodies and reputed companies in the private sector. With the several developmental schemes that have been adopted for the prosperity of the country, the economists are employed to work out strategy for systematic development. Banks, insurance companies, investment corporations, industrial corporations, financial corporations have good openings for economists. Newspapers, economic journals and periodicals dealing with trade, economic, commercial, statistical and allied fields also employ economists. These positions may be termed as Commercial Editor, Economic Editor, Economic Analyst and Statistician.

In addition to the avenues of employment mentioned above persons qualified in economics can also compete for general administrative posts along with other graduates. They can also appear in the competitive examinations conducted specifically for them. This is called Indian Economic Service or Indian Statistical Service conducted by the Union Public Service Commission. Person selected through these services can hold posts under the Government as Director, Joint Director, Deputy Director, Senior Research Officer, Assistant Director, Research Officer, Statistical Officer. Their services can be transferred to any department of the Government where statistical work is involved. Since, there is some shortfall of these people Government allows them to have a lateral entry to hold sufficiently higher posts through interview conducted by the UPSC.

Details of Indian Economic Service/Indian Statistical Service are given below.

The competitive examination for both the services is held by Union Public Service Commission annually but is independent of IAS Examination. Initial recruitment is made to grade IV post which is equivalent to Junior Group 'A' post in other departments. The written examination comprises compulsory and optional subjects and oral interview. Subjects for the examination are:

(i) *Compulsory*—(a) General English, (b) General knowledge.

(ii) *For Economic Service*—Two papers in Economics and two in Statistics. In addition to these subjects candidates have to offer two more subjects out of the subjects specified for economic and statistical service separately.

To appear for the examination candidates must hold a degree with Economics or Statistics for Economic Service and for Statistical Service they must be graduates with Statistics or Mathematics or Economics.

Further details can be had from the original source *i.e.* the advertisement of the UPSC.

Generally speaking qualified persons in economics have a wider spectrum of employment.

CHAPTER 17

CAREERS IN SELLING

Selling is a process of exchange of goods and is in practice all over the world for centuries together. In earlier days when money as a medium of exchange was not invented, goods were exchanged for goods. The practice was called as 'barter system'. Then followed pedlars and hawkers who announced their goods on tundling carts from one place to another. Daily, weekly and special trade fairs came into existence where people could buy goods at one place. People took their goods to such places for selling purposes. Goods such as food grains, vegetables, fruits, cattle and other household articles dominated these fairs. Next, stationary small shops appeared in villages which sold necessities of life.

All these people traded their goods by themselves. There are such shops still available everywhere. However, in cities and other urban areas, because of the impact of industrial and economic advancement, brought in new concepts and techniques of selling as a result of mass production of consumer goods.

Selling is now no longer a simple exchange of goods. It has been developed into a recognised business function. A person who plays a link between manufacturers or producers of goods and their consumers has been named as salesman.

Manufacturers of goods produced in mass require their immediate distribution for sale to keep the wheels of the industry moving and avoid accumulation for goods. These manufacturers face a stiff competition and therefore have to look to quality, variety, utility and price of their goods so that they are sold immediately on appearing in the market. To preserve the professional ethics they cannot degrade the goods of similar nature manufactured by other like manufacturers but at the same time announce advantages and special points of their goods to earn an edge over others. To achieve this they adopt publicity, media such as news paper advertisements, radio and TV insertions, hoardings, films, cinema slides, supply of samples, etc.

Selling therefore is concerned with varied activities of distribution and marketing of goods involving techniques for promotion of sales of the products with a principle that more the turnover of the product, more the profit. Salesman, as said earlier, is the link to bring the seller and buyer together. He moves goods from sellers

to consumers. He has to keep interests of both the seller and consumer presumably to earn goodwill from the seller and credit from the consumers.

However, his job is not confined solely to creating an immediate demand for goods and services but at the same time he has to build up a continuous flow of demand through long-term relationship. Though he serves the interests of both the parties, his aim always remains the satisfaction of the consumers which is entirely based on the quality of goods and services. Hence, salesmen have to ascertain and activate the needs of consumers and satisfy such needs by advising manufacturers to produce the goods liked by the consumers. Because of multiplicity of goods and their various aspects, salesmanship has now become a recognised business function and a special department altogether has become a necessity of the industry's part. From a petty retail shop as an outlet for selling there is a major shift in big cities where a crop of shopping complexes becomes the order of the day. People visit these complexes for purchasing their daily needs.

Over the years there is a growth of establishments in selling viz. departmental stores where all kinds of goods are sold so that consumers are not required to wander for them; self-service shops where articles are kept with the choicest arrangement—enabling customers to pick up those goods by themselves, make payment and depart; chain stores which make bulk purchases and then distribute through their different branches; cooperative stores which are formed by a few people who are members, raise capital through subscription and sell goods and share the profits, and mill retail shops that is the manufacturers themselves enter into selling fields by opening their selling outlets. Some people do business on telephone calls, by mailing orders and door to door selling.

There are a number of ways of selling each dependent on its own characteristics:

Wholesale Selling

Manufacturers sell their goods on a wholesale basis *i.e.* in large quantities to be sold in retail or in small quantities by dealers or shopkeepers. Wholesellers are therefore a major link between manufacturers and small dealers. For services of selling goods these wholesalers get commission on percentage basis on the total turnover of sales. They are also called as commission agents. Such commission agents are appointed by manufacturers to serve a specific geographical area and they enjoy exclusive rights of sales within that area. Sometimes manufacturers set up their own retail channels of sales.

There is a chain of handing over of the production from main manufacturers to ultimately consumers as Manufacturer → Wholesale Seller → Seller → Retailer → Consumer; Manufacturer → himself a retailer → consumer.

Selling is not confined merely to goods, products, consumer items but also can cover services. Insurance policies, units of Unit Trust of India, bonds, shares, properties—movable or immovable, stocks, securities and others fall under selling or services. Export and import across national borders is done by some people on commission basis.

Because of stiff competition in the trade market, most of the organised concerns establish their own sales departments/divisions manned by sales executives. These sales executives adopt modern techniques of sales to boost sales. Such departments/divisions also have other organs like market research to know the pulse of consumer preferences thereby they can suggest new items of products, modification in the old ones and style of design, package, labelling and performance of products. The basic approach in such things is that a sales organization is not meant solely to dispose of the output but it has to consider and promote consumer likes and dislikes.

Advertising is extensively used for popularising products and catching customers through various media as press advertisements, hoardings, pamphlets, posters, banners, cinema houses, film strips etc.

To achieve the goal of maximum sales all persons who are involved in selling business adopt a number of techniques to boost sales—such techniques can be mentioned as:

(a) Selective selling *i.e.*, selling of products to selected organizations exclusively.

(b) Exclusive distribution outlets *i.e.*, giving outright rights to certain organizations for selling products to anybody they like.

(c) Instalment selling *i.e.*, accepting money as a price of a commodity over a period of time in small amounts preferably on monthly basis. Often this method is adopted when there is ample presence of products in the market and sales are not picking up or to offer some convenience to customers to pay the cost.

(d) Consumer Service Policies *i.e.*, offering guarantee or warranty of the products sold of their repairs, replacement in case they go out of order or even to do the initial servicing.

(e) Other sales promotion techniques are discount selling, clearance sales, annual sales, gift schemes, lucky draw prizes, free gift packets, special rebate on bulk purchases, off-season bargain offer, waving of some part of commission, bonus coupons. There is a scope for such innovations to acquire more sales of products.

Employment Opportunities

There are a number of occupational opportunities in selling. A list of occupations that can be chosen as a way of life or a career is given hereunder.

Appraiser, auctioneer, share market broker, buyer, commercial traveller, general salesman, travelling salesman, commission agent, sales convasser, counter sales girl, crier, distributor, fashion model, insurance field officer, share market jobber, manufacturer's salesman, medical representative, merchant, shop-keeper, order supplier, petty commission agent, propagandist, property dealer, purchasing agent, real estate salesman, retail trade salesman, retail trade sales supervisor, selling agent, shop assistant, shop attendant, stockist, technical demonstrator, technical salesman, valuer, finance agent, newspaper supplier, hawker, pedlar, street vendor, petrol pump attendant, home delivery man, money lender, pawn broker. Both the sexes can select anyone of the jobs quoted here as their career.

Training

Saleswork offers career opportunities where extensive touring is involved; staying away from family and home is required; eating, in hotels or restaurants is to be done, spending money from one's own pocket has to be done initially and involves such other inconveniences.

To make the most of the career opportunity, it requires a formal training in selling techniques. There are institutions which offer such training information of which is given below:

<i>Sl. Name of University/ No. Institute</i>	<i>Under Graduate</i>		<i>Courses</i>	<i>Offered</i>
1. Aligarh Muslim University, Aligarh	—	—	DMB	—
2. Allahabad University, Allahabad	—	—	DBA DIM	MBA
3. Andhra University, Waltair	—	—	—	MBA
4. Banaras Hindu University, Varanasi	—	BBM	DBM	MBA Ph.D
5. Birla Institute of Technology and Science, Pilani	—	—	—	MMS
6. Institute of Management Studies, Bombay University, Bombay			DBM DIM	MMS
7. College of Commerce, Patna	—	—	—	MBA

<i>Sl. No.</i>	<i>Name of University/ Institute</i>	<i>Under- Graduate</i>		<i>Courses Offered</i>	
8.	Indian Institute of Social Welfare and Business Management, Calcutta University, Calcutta	—	—	DBM DIM	—
9.	Commerce and Secretariat Practices Institute, Certificate, Arab-ki-Sarai, New Delhi	—	—	—	—
10.	Dept. of Business Management and Industrial Administration, Delhi University, Delhi	—	—	DBM	MBA
11.	Gorakhpur University, Gorakhpur	—	—	DBM	—
12.	Indian Institute of Management, Ahmadabad	—	—	—	MBA
13.	Indian Institute of Management, Calcutta	—	—	—	MBA
14.	Indian Institute of Science, Bangalore	—	—	DIM	—
15.	Indian Institute of Technology, Kharagpur	—	—	DIM	—
16.	Indian Institute of Technology, Madras	—	—	DIE	—
17.	Indore University, Indore	—	—	DBM	—
18.	Jammu University, Jammu	—	—	DBA	—
19.	Jadhavpur University, Jadhavpur	Certificate	—	—	MMS
20.	Kerala University, Kerala	—	—	DBM DIM	MBA
21.	Lucknow University, Lucknow	—	—	—	M. Com
22.	Madras University, Madras	—	—	DMB DIM	MMS

<i>Sl. No.</i>	<i>Name of University/ Institute</i>	<i>Under- Graduate</i>		<i>Courses Offered</i>	
23.	Madurai University, Madurai	—	BBA	—	MBA
24.	National Institute of Training in Industrial Engg. Bombay	—	—	DIE	—
25.	Osmania University, Hyderabad	—	—	DBM	MBA
26.	Poona University, (BYK College), Nasik	—	—	DBM	MBA
27.	Punjabi University, Patiala	—	—	—	MBA
28.	P.S.G. College of Technology, Coimbatore	—	—	DIM DBM	MBA
29.	Rajasthan University, Jaipur	—	—	DBM	MBA
30.	South Gujarat Uni- versity, Surat	—	—	DIM	
31.	Xavier Labour Rela- tions Institute, Jam- shedpur	—	—	DBM	MBA

Abbreviations:

- BBM —Bachelor of Business Management
 BBA —Bachelor of Business Administration
 DBM —Diploma in Business Management
 DBA —Diploma in Business Administration
 DIE —Diploma in Industrial Engineering
 DIM —Diploma in Industrial Management
 MBA —Master of Business Administration
 MBM —Master of Business Management
 MMS —Master of Management Studies.

Salesmanship is an art of attracting customers towards goods. With the quality of goods, the persons who make the sale of it should also possess certain qualities. These are given below: as Pleasant, amiable and warm personality, conversational ability and initiative, ability to get along well with people, good memory, good health and energy and neatness.

All these qualities are required to cultivate friendship and winning confidence and trust of customers for which purpose well-groomed and well-poised personality is an asset. A salesman must possess fluency in speech and distinct expression, ability to talk for long hours with diction and style for which purpose he must have command over language. He should be enthusiastic, resourceful and self-reliant. His job involves mixing up with people, understand them and judge their pulse, inclination and has to read their mind. He must remember also what did he speak and promise earlier and should be smart in appearance and behaviour.

Persons qualified when appointed on the specific jobs are given orientation training by the employing company and also is apprised of its philosophy and objectives. Taking into consideration all this he is to make efforts in promoting sales of products.

In addition to the jobs that are available and quoted earlier salesmen have opportunities to rise on the ladder of the profession on positions like Branch Manager, District Manager, Area Manager, Assistant Manager, Sales Manager, Executive Sales Manager, Sales Officer. All these employees are employed by Central and State Government Sales Emporia, Super Bazars, Cooperative Stores, Departmental Stores, large mill retail shops, public sector undertakings. Entry in the job is normally done through an advertisement. For senior positions experience in the relevant field is insisted upon.

For jobs at international level in selling people must have knowledge of various aspects of such sales. This sort of training is also available and is imparted by Indian Institute of Foreign Trades, New Delhi. Diploma in International Trade is of 10 months duration for junior level executives of large export houses or for fresh university graduates. A course in Trade Policy and Export Promotion is of 8 weeks duration and is available for senior executives of export organizations. A course in Marketing Research is of two weeks duration and is meant for senior executives of export houses. A short course in Export Procedures and Documentation for 9 days and similar other course in Export Techniques of 10 days are also available in export management and executives of exporting organizations.

State Trading Corporation of India, Trade Fair Authority and other like organizations offer good opportunities for these trained persons.

Salesmanship, therefore, is a good employment opportunity and young people should enter into it with well-preparation.

CHAPTER 18

CAREERS IN ROAD TRANSPORT

Travelling in Haryana and Punjab by Haryana Roadways buses or Punjab Roadways buses respectively, though not a luxury, yet it is immediate, quick and fast moving. Ordinary buses, semi-luxury buses, luxury buses, deluxe buses, airconditioned buses, direct buses, private operating buses fly on the roads of both the states lifting commuters at a speed and in number that in itself assures people in the states timely departure or return without loss of time. The same case is with goods traffic in the states. Each village has been linked by roads that there is no difficulty for buses to reach that village.

It is said that the economic welfare of the society, the magnitude of business activity and the progress of the civilization depends upon the development of the means of transport. The road transport in the above two states has proved this dictum. It is the most commonly used mode of transport that these people do not depend on other ways of transport. It has really affected more profound changes in the social characteristics of the states. This is because road transport becomes more popular because of its free movement at lesser investment and generates employment opportunities to a larger number of people.

Transport plays a pivotal role in the economic growth of a country. A well-knit and organised transport system is thought to be a live wire of country's commercial, trading and business advancement. In addition to providing jobs to young people, it also provides a basic infrastructure for bringing majority of people living at far-off places into the main-stream of life. No doubt, other modes of transport like the railways, airways and waterways are equally important in moving the country's economy towards progress, yet, surface transport has got a unique place because it can move at the will and convenience of the people. Since ours is the agrarian economy our farmers need such a mode that it will be available at their doorstep for transportation of fertilizers, seeds, equipments, distribution of agriculture produce—grains, vegetables, etc. to the nearest markets. There is no reliable source than the road transport.

The advancement and progress that we witness in the above two states is mainly, among other things, due to greater use of

road transport. That cannot be denied. Therefore, at least in India, road transport has a place next to agriculture and is the largest source of revenue to the national treasury.

Everyday motor vehicle traffic lifts 6 times more passengers and seven times more goods than its counter system of railways. Nobody can dispute that efficient and cheap transport is a prerequisite of economic growth and social progress. It is a must for industrial growth also. Industries need uninterrupted supply of fuel raw material, spare parts for operating efficiently its production, plans. They also need easily accessible markets to sell their products. Be it of moving of goods or passengers, be it a rural or urban area, be it plains or rugged mountains road transport is a veritable answer to problems connected to the welfare state.

Because of its vital importance to ply on roads, roads must be in good conditions. To look after this aspect Central Road Research Institute has been set up which tenders advice to State Governments on problems concerning road works. The Highway Research Station at Madras carries research on designs and construction of Highways or Express Ways. Union Ministry of Shipping and Transport deals with types and designs of route making along the national high/express ways, like creating advertisement boards on road side, form of recording data on bridges, scrutiny of designs for bridges and assessment of requirements. An Association of State Road Transport Undertakings has been separately set up to work out and coordinate activities of various undertakings and to secure procedural uniformity and higher standards of service to passengers and customers. There are forty-six such undertakings. Statutory State Road Transport Corporations have been setup in each state and in big cities and towns having their own fleet of buses.

For interstate transport of goods without any hindrance National Permits are granted to certain transport agencies.

There is a Transport Development Council for Coordination between the policies of Central Government and State Governments. Another body called Inter-State Transport Commission is responsible for development, coordination and regulation of road transport service on inter-state routes. All the states and Union Territories have reciprocal arrangements for moving of passengers and goods. The road transport system is also useful during war time; natural disaster situations like flood, earthquake; in moving of forces, armaments; supply of provisions and provide relief to the needy ones. Thus road transport system gives an indication on the national progress.

Behind efficient services to commuters and their goods there is a band of workers of different categories at different levels. It will be interesting to collect some information about them as to how they help in operating the transport system.

(1) Civil Engineer (Highway and Road). He plans, organises supervises constructions or repairs of roads connecting cities, towns and important places within them. He undertakes reconnaissance and topographical surveys to gather information regarding villages, towns and cities to be connected, rivers, culverts and railway crossings etc., to decide suitable route for road construction. He checks work from time to time to ensure proper consideration of earthwork and prevention of sinking of roads. He checks measurements taken by overseers for payment of bills and inspects completed work. He may invite tenders and assign road construction to Government approved contractors.

(2) Mechanical Engineer (Automobile). Automobile Engineer designs new models and plans manufacture and repair of cars, trucks and other vehicles. He studies performance of various models of automobiles and designs new models or types of vehicles to give better performance, appearance and durability according to current demand in market or consumer needs. He supervises assembly or repair work, effects necessary modifications and replacement of parts, gets tuning and adjustment done and checks completed vehicle for efficiency and road worthiness. He may specialise in designing or repairs of particular type or petrol or diesel vehicles. He may be designated as Service Engineer or Service Manager/Works Manager if placed as incharge of a motor transport workshop.

(3) Traffic Inspector (Motor Transport). He checks and examines tickets of passengers on buses and supervises work of conductors, checking inspectors and drivers. He selects a route and boards any bus on that route within the allotted area. He checks way bill of conductors and tallies it with tickets already sold. He prevents overloading and checks tickets of passengers to ensure that nobody is travelling without ticket or exceeding his journey. He supervises and guides conductors in-charge of their duties. He ensures that buses are running to schedule and traffic rules are being observed. Maintains records, attends to investigation of accidents and submits daily trip reports.

(4) Bus Timekeeper. Keeps daily record of arrival and departure of buses at bus stations of terminus. Regulates running of buses to time schedule, informs supervisor officer about heavy rush of traffic for extra running of buses, attends to enquiries of public, marks attendance of drivers and conductors, allots them duties and arranges for relief areas, is also in-charge of lost property.

(5) Station In-Charge/Station Superintendent. He controls and co-ordinates work of staff employed at roadways and supervises operations of all passenger buses; prepares duty roster of bus conductors, drivers and cleaners, checks attendance of staff and supervises their work. He maintains check sheet of all incoming and outgoing vehicles, their numbers, station to which go and arrive from to ensure regularity and punctuality of service.

Arranges for additional running of buses to relieve traffic pressure, rushes relief buses and other assistance in case of breakdowns, accidents, attends to complaints of passengers. He is responsible for upkeep and maintenance of bus stations and looks after amenities and comforts of passengers.

(6) **Goods Supervisor.** He supervises receipts, storage, despatch and delivery of goods, parcels, freights, etc. inspects goods to be transported, checks their packing, directs loading and unloading operations. Travels on line and carries surprise checks to ensure that contents tally with way bill etc.

Training

Automobile is a self-acting machine like motor cars, scooters, trucks, rickshaws, etc. Automobile industry employs a large number of employees—technical as well as other personnel.

These people should be adequately trained personnel. To qualify as an Automobile Engineer a person has to take a degree in Automobile Engineering which is of 5 years' duration. Admission qualification is higher secondary with physics, maths and chemistry. For Diploma course which is of three years' duration, qualification is X Class pass. Diploma holders in electrical/mechanical engineering may also have post-diploma certificate course in automobile engineering of one year duration. Madras Institute of Technology, Madras; Victoria Jubilee Technical Institute, Bombay; and Indian Institute of Science, Bangalore offer courses in Automobile Engineering. There are Polytechnics which offer diploma course in the subject. At Banaras Hindu University and Madras University students electing for mechanical engineering degree course can offer automobile engineering as elective subject. After obtaining certificate, diploma or degree course, students obtain practical training in automobile industry. Indian Institute of Technology offers research facilities under Council of Scientific and Industrial Research. Certificate Courses in automobile engineering are available in many of the industrial training institutes.

Openings

There are mainly five departments in the transport industry. Under each department, there are various job opportunities. These departments are : (1) Transport (Traffic), (2) Stores, (3) Civil/Electrical, (4) Mechanical, (5) Security. The various openings are as follows:

Station supervisor, Foreman, Service Station in-charge, Chief Inspector/Welfare Inspector/Yard Master, Additional General Manager, Deputy General Manager, Chief Mechanical Engineer, Controller of Stores & Purchase, Traffic Manager, Stores Officer/Purchase Manager, Executive Engineer, Works Manager, Assistant General Manager, Assistant Engineer, Assistant Works Manager, Traffic Superintendent, Assistant Traffic Superintendent, Chief

Store Keeper, Traffic Supervisor, Traffic Inspector, Service Manager, Booking Clerk, Checker, Reservation Clerk, Controller (Goods), Depot Manager, Assistant Commercial Superintendent, Wireman, Overseer, Draughtsman, Tracer, Fitter, Mechanic, Welder, Blacksmith, Carpenter, Crankshaft Grinder, Chargeman, Security Officer, Security (General), Assistant Fire Warden, Security Inspector, Driver, Conductor, Security Guard, etc.

Since, there are various transport corporations, each has its own set up. Hence, there is a variety of designations. Recruitment of staff differs from State to State. Generally higher posts are advertised in the leading newspapers, the lower grade vacancies are filled in through employment exchanges.

There are self-employment opportunities for those who have been trained in automobile engineering. They can open up their own garage or repair workshop or take up work on contract. There are also other lines like dealership in automobile and automobile parts, automobile battery, petrol service stations/petrol pumps-cum-repair workshops. Earnings in these lines is very good.

Institutes Conducting Examination in Automobile Industry

(1) **Indian Institute of Road Transport, Bombay.** It is an academic-cum-professional body. It has its branches at Ahamdabad, Bangalore, Delhi, Hyderabad and Madras. The Institute conducts students Membership, Graduate Membership and Associate Membership Examinations.

Studentship Examination is open for secondary school certificate examination passed candidates. It includes subjects as elements of Transport, Statistics, Storekeeping and Automobile Engineering. Students passing this examination can take up Graduate Membership Examination and these graduates can take up Associate Membership Examination. This examination is in two parts. No specific time limit is required.

(2) **Patil Institute of Transport Management, Bombay.** It offers diploma in Transport Management to Graduates in Arts/Science/Commerce which is of one year duration.

(3) **Association of State Road Transport Undertakings.** This association has developed training facilities at Central Institute of Road Transport, Pune for the benefit of Transport Undertakings. The training is given in Management Development, training for supervisors, training for workshop staff, Training for drivers, conductors and others.

It is absolutely necessary that drivers and conductors should have a badge issued by the Regional Transport Officer which is a traffic wing of the state police or Metropolitan Police Force. No person in this category can be appointed without having this badge.

The growth of the industry is fast which can be seen in the following table (Ref.—Pocket Book of Labour Statistics, 1984).

	1981	1982
No. of Undertakings	32338	34503
Employment	423602	461558

In one year only there was an increase of 2165 transport undertakings in India creating job opportunities for 37,956 people. If the trend continues there would be very good prospects for the industry. There are 46 State Road Transport Corporations which offer very good opportunities of employment. Besides, there are manufacturing companies like Premier Automobiles, Bombay; Ambassador Motor Manufacturing Co., Calcutta; Standard Gazel Industries, Madras; Bajaj Scooters, Pune; Bajaj Tempo, Pune; Vijay Scooters, Lucknow, etc. There are other industries manufacturing scooters, tempos, motor cycles, auto-cycles, etc. which also offer good number of job opportunities. By December 1981 there were 461,558 people working in this industry and holds a good promise in future too.

CHAPTER 19

CAREERS IN AGRICULTURE AND ALLIED FIELDS

There was a joke current some years ago in India that Indian people become happy when it rained in America. We were so much dependent on the food stuffs imported from America that the joke became almost a reality. We moved very fast because of the caustic sting of the joke and now not only that we are not importing food stuffs but rather export them to other countries. However, we should not be deceived by this pleasant condition because a lot more has to be done to improve agricultural output which is still low compared to output of other advanced countries whereof this field has a wide scope for paid employment and self-employment as well.

This sub-continent commands vast resources of land, water, various inputs and farming manpower. However, despite this there is a shortfall in production per hectare. The shortfall in production of agricultural yields is mainly due to sticking to age-old methods of cultivation and reluctance to shifting to new technology. To create a healthy sense among the traditional farmers about new technology and mechanised farming and produce required skilled and professional manpower in the agricultural field. Indian Council of Agricultural Research was set up for formulating plans and co-ordinating agricultural education. As a result, there are now a good many Agricultural Universities, Research Institutes, Coordinated Research Projects, Agricultural Colleges, Farm Science Centres, Trainers' Training Centres for Higher learning in agriculture besides agricultural schools and centres for lower categories of workers. Because of these efforts we swiftly moved to green revolution, the pet idea of Pt. Jawaharlal Nehru in which we achieved a major success.

Training

Training in agriculture and allied fields is available in the following branches:

(1) **Agricultural Education and Research.** Research in agricultural fields has an important role to play. It not only concentrates on educating farmers about new ways and techniques to raise output but also carries research in developing new varieties of seeds,

effective pesticides and fungicides, high yielding seeds, fodder for cattle, raising fertilising capacity of soil etc.

(2) **Agricultural Production.** Alongwith raising food stuff categories of serials as staplefood, attention is also paid to subsidiary food products such as poultry, piggery, sheep breeding besides developing hybrid crops which grow fast returning high percentage of yield.

(3) **Soil and Water Conservation.** Constant use of soil erodes its producing capacity. Hence, it is necessary to conserve soil fertility. Agriculture has an undetachable relationship with water. If no water, no production is the important equation. Earlier, water resources were flowing down the seas even though such water resources were abundant. Quick attention was paid to this aspect immediately after independence and many projects were taken with multipurpose utility in a bid to erect an infrastructure for developmental activities in all the sectors. Damodar Valley Corporation, Koyna Hydro-Electric Project, Farrakka Barrage, Beas-Sutlej Project, Bhakra Nangal Dam and Similar other projects had halted the flow of water to the seas. This conserved water now can be used for irrigation of land, generation of power and conserving fertility of soil.

(4) **Animal Husbandary and Dairying.** Milk and milk products like cheese, butter, ghee are absolutely necessary for health of people. Such products are earned from cattle of different categories such as buffalos and cows. Constant attention is being paid to raise the yield of milk which is termed as a whole meal. Dairying therefore, has enormous capacity to offer employment. Upkeep of milch cattle is a primary necessity to raise the milk yield.

(5) **Fisheries.** India is surrounded by water from three sides besides rivers, brooks and streams in her heartland which are breeding places of fish of different varieties. Processing, preserving, canning, transport and export of this food in itself has become an important industry. By quenching the thirst of local population through daily catch, it is also a very good foreign exchange earner.

(6) **Forestry.** Wanton felling of trees, scant attention to forest products such as timber, fuel, gum etc., has very much ruined our country. Importance of forests lies in the fact that they help raining also. This was recognised very timely and we are paying attention to it to a greater extent.

Allied to the above major branches which provide innumerable job opportunities to the trained and professional manpower, there are other equally important branches in the form of Land Reforms, Management of Natural Disasters, Agricultural Marketing, Storage of Food and Warehousing, Investment in Agricultural Financial Institutions, Special Programmes of Rural Development, Community Development and Panchayati Raj, Cooporation,

Medium and Minor Irrigation, Flood Control and Command Area Development, etc.

In addition to training in the above areas, there are Farmers' Agro-Service Centres established to train and assist entrepreneurs, groups of farmers, personnel of cooperatives. The main function, besides training, of these centres is to distribute agricultural inputs, hiring of agricultural machinery and equipments to small farmers. Agro-Industries corporations have also been set up for manufacturing and distribution of agricultural machinery, processing of food and other vegetable products, setting up of cattle and poultry feed plants, oil extraction plants, grain milling, fertilizer and compost plants, cold storage and fisheries projects.

Through various educational institutions following courses are available. B.Sc. (Agriculture), M.Sc. (Agriculture), B.V.Sc. (Veterinary science), M.Sc. (Veterinary science), Ph D., B.Sc. (Forestry), Diploma in Forestry, B.Sc. (Dairy Science), B.V.Sc., and A.H, M.Sc. (Animal Science), Diploma and Certificate in Agriculture, Diploma in Dairy Cattle Production/Poultry Production, B. Tech. (Agricultural Engineering), B.Sc. (Horticulture), M.Sc.(Horticulture), B.Sc. & M.Sc. (Fisheries), M. Tech. (Agriculture), B.F.Sc., B.Sc. (Marketing & Cooperatives). First degree courses are available for candidates passing 10+2 stage and post graduate courses are there for such degree holders in their respective fields of specialization. Admission to some of the courses is done through merit in the qualifying examination or entrance examination.

Recruitment

Professionals and skilled workers in agriculture find employment in educational institutions as teaching and research staff. These educational institutions are agricultural universities, colleges, research institutes, state directorates of agriculture or departments of agriculture, fertilizer factories, seeds corporations, state farm corporations, stud farms, banks' cooperative societies. The biggest employer besides above institutions is Indian Council of Agricultural Research. At present there are 21 Agricultural Universities, 33 Research Institutes and 58 Coordinated Research Projects and more than 100 agricultural colleges including agricultural engineering colleges.

Following are some of the establishments which offer employment to these professionals. Alongwith, different posts to which recruitment is made are given.

(1) Educational Institutions

(a) *Agricultural Schools.* There are agricultural biased schools, multipurpose schools in which teachers are recruited. They are called Agriculture Teachers or Instructors and carry pay scales which are applicable to similar posts in other educational insti-

tutions. Their recruitment is generally made through Employment Exchanges.

(b) *Universities, Colleges, Polytechnics.* The posts available in these institutions are called lecturers, readers, professors who get the same pay as in other colleges/universities. Besides teaching work in these institutions, teachers are allowed to prosecute further studies/research in their respective fields of specialization. There are also research officers/associates, technical assistants, laboratory assistants, demonstrators to help teachers in their field of activity. For teaching posts second class post-graduate degree is essential. Published outstanding work or doctorate degree become assets to stage an entry easily in these institutions. These posts are filled in through newspaper advertisements.

(2) Indian Council of Agricultural Research

(a) *Scientific Service.* There was a long felt need to set up a board to recruit scientists in the council which ultimately was set up in 1975. It is called Agricultural Scientists Recruitment Board. The posts to which recruitment is made are Scientists (S), Scientists-1 (S-1), Scientists-2 (S-2), Scientists-3 (S-3). The scientists except 'S' category recruited in this council need not wait for promotions to higher posts by virtue of a fixed period of service in a particular post. They can automatically rise to next higher grade subject to assessment by an external panel irrespective of the fact whether there are such vacancies available or not. These scientists are placed in appropriate grades which are applicable to the Central Government Officers. Recruitment to these posts is made through advertisement and holding a competitive examination. Candidates should be below 30 years of age. Candidates qualifying the examination are interviewed and appointed as per merit attained in it. An advantage of this service is that these officers can serve the council upto their age of 60 whereas in other services retirement age is 58, with a provision of assessment at the age of 50, 55 and 58 years.

(b) *Technical Service.* Scientists are supported by technical and administrative staff. The technical people help scientists in laboratories, workshops, fields, libraries and documentation sections. Several technical staff are grouped in Three Categories i.e. Farm Technicians, Laboratory Technicians and Workshop Staff.

(3) State Department of Agriculture

Every state has its own department of agriculture which is headed by Director of Agriculture and is assisted by Additional Director, several Joint Directors, Deputy Directors and Assistant Directors. The functions of the directorate are to prepare schemes for development in respect of crops, seeds, farm implements, extension, education and training of agricultural manpower. At the district level there are Agricultural Officers, District Development

Officers, Agricultural Extension Officers, Block Development Officers. In addition, there are many village level workers. Recruitment to the gazetted posts is made through State Public Service Commission for which degree in agriculture is required. Non-gazetted posts are generally filled through Employment Exchanges. Pay scales and other benefits vary from State to State.

Fertilizer Industry

As nutritious food is the prime necessity of human growth, same is true of plant world. Nutrition to various crops is supplied through fertilizers which are manufactured in many fertilizer establishments. There are mainly two types of workers in this industry. They are field staff consisting of Field Demonstrators, Soil Analysts, Farm Supervisors etc. Officers' cadre consists of Agronomists, Soil Scientists, Horticulturists, Plant Pathologists. The field staff is recruited through Employment Exchanges or advertisements. Officers are recruited through advertisements.

National Seeds Corporation, State Farming Corporations, Central and State Warehousing Corporations, Food Corporation of India, Fertilizer Corporation of India, Agricultural Prices Commission, Indian Farmers' and Fertilizer Corporation Ltd. and several other establishments offer good many employment opportunities to professionally trained, skilled personnel in agriculture. The different occupational opportunities that exist in these corporations are called Chief Agricultural Scientist, Additional Chief Agricultural Scientist, Superintendent, Dy. Superintendent, Technical Assistant, Seed Testing Officer, Seed Production Officer, Plant Production Officer, Soil Conservation Officer, Farm Superintendent, Agricultural Officer, Manager, Senior Assistant Manager, Assistant Manager and other workers. All these persons are placed in appropriate grades and carry good perks.

In mobilising self-employment programmes Nationalised Banks have been assigned the duties to make credits available to deserving and willing people for self-employment. To gear up this task all these banks employ agricultural graduates in cadres of officers, technical and clerks. All types of graduates in agriculture and allied branches of it are recruited in the nationalised banks, State Bank of India and also Reserve Bank of India. There are special boards to recruit these personnel in various categories through a competitive examination. Programmes for which Banks liberally release credits to people are Integrated Rural Development Programmes, National Rural Employment Programmes, Training of Rural Youth for Self-Employment and many others.

Among other self-employment opportunities there are some other schemes. Under Farm Graduate Scheme Agricultural and Veterinary graduates are helped in setting up their own agricultural farms, horticultural farms, poultry farms, piggery farms, sheep breeding centres, Assistance under the scheme covers financial

requirements from purchase/preparation of land to the stage of marketing of produce. Candidates desirous of entering into these fields and fully qualified can approach any bank for obtaining credits.

Under Agro-Service Centre Scheme engineers/entrepreneurs/agricultural engineers receive appropriate training and subsidy in interest on loans. Fertilizer Corporation of India gives dealerships to agricultural graduates of their products. Under the scheme drawn for Small Farmers/Marginal Farmers loans are given for purchase of tractor, sinking of wells, purchase of pump-sets, poultry and piggery farming, purchasing bullocks, etc.

India in origin is an agricultural country wherein there is a wide scope for employment which has further been widened through some of the programmes that have been mentioned above. It should be taken as an opportunity by all the agricultural graduates to turn their own land into greenery and help nation to realise the hope of the Green Revolution.

CHAPTER 20

CAREERS IN COMMUNICATION

Two friends meeting after a long time exchange pleasantries. Ramesh wrote a letter to his father asking for money to pay boarding and lodging charges of his hostel. His father sent money by Money Order. Hemant sent a telegram to his mother of his success in B.E. Examination passing it in first division, Shri Chandulal talked from Delhi on telephone with his counterpart in Bombay about a taking in share market. A message was flashed on Radio about talking precautions against spread of Malaria. Police control room displayed a photograph on T.V. of a missing boy. Ashok sent a message by telex of visiting party for general inspection of Madras Office of Post Master. Naresh witnesses a film once in a fortnight.

There is a direct or indirect talk involved in all the above quoted hypothetical incidents which convey something. All these acts fall under commonly known action, i.e., communication. Apparently, these are two way of communication. One of having a personal dialogue. However, it is always not possible to have such a personal communication and hence, recourse to other media is taken. We contact persons placed at distant places through certain devices invented for the purpose. We have used words like telegram, telephone, television, telex—the systems through which a despatch messages. The beginning of each word is with tale which means distance. The rest of the word indicate the type of message such as phone (sound), vision (picture), gram (written words). To make possible distant communication within the shortest possible time all these systems are used. The urgency of sending or receiving messages is so great that we do not want to lose time to decrease anxiety or offer pleasure and happiness to the party being communicated. The fast running world requires fast carrying devices of messages.

We simply have to write a letter, go to telegraph office to send a wire, dial a number and convey the message. It is so simple, easy, time saving and cheap. However, one does not bother about the whole battery of workers behind these simple tasks. Who are these people who help us in our urgent and important tasks? A little peephole in this direction will unfold us various types of personnel holding different posts who work round the clock and receive common people of their worries and anxieties in establishing

contact with friends, relatives and other people. These are the personnel who work in communication field. It will, therefore be interesting to know about them and perhaps, find one for oneself to enter into with early preparation.

There are several departments set-up suiting to the type of functions they are supposed to undertake or services they are required to provide to people. They are classified as under alongwith functions.

(1) **Postal Authorities.** The cheapest way of communication for common people is to write letters, may be a post card, inland letter, envelope, sending of a parcel of small dimensions etc. This is the work of this authority. For convenience of people there are postal boxes placed at suitable places. Persons can post written communication in these boxes. An employee of the postal authorities visits these boxes, collects them, takes to post office, where they are sorted out as per their destinations, puts them into relevant bags and carries them to state transport bus depots, railway stations or airports for their onward journey. When these reach the main destination again they are sorted out as per their exact destination, delivered to the exact person. For money order, parcel, registry we have to go to post office and deposit with the person of postal authorities who issues a receipt as a proof. After some time we receive a communication from our party of the receipt of money, parcel or registry.

(2) **Telegraph Offices**—Urgent messages are transmitted through telegraph offices. We have to go to such an office, fill in the form conveying a message in as many few words as possible (because every additional word costs), tender the form to the person of the telegraph office, get a receipt after due payment is made. It is now the responsibility of the office to deliver the message at the earliest. If any body does not want to go to telegraph office he can convey the message to that office on telephone which is called phonogram. You just lift telephone receiver, dial a specific number, convey the message. Rest is done by the authorities. The bill for the services is included in the telephone bill. If the message is too urgent it can be sent by express wire which travels at a faster pace.

(3) **Directorate of Telephones.** This office installs an instrument called telephone instrument on request made to it and after paying a prescribed fee and deposit of which rates are different and its availability also varies. Without moving, a person can ring a number and talk to other party if it is stationed at the same place. If the other party is placed at a distant place then he can use services of the authority for booking a trunk call—ordinary, urgent or lightning as the case may be. After getting line we can talk with the party. To avoid such dependence there is another quicker method used which is called Subscribers Trunk Dialing Service. Under this system certain cities have been allotted code numbers. This number is to be dialed first and then the number of the party with whom we want to talk. It depends upon the distance involved

according to which time is divided into frequencies and such frequencies are taken to be one telephone call for calculating charges.

(4) **Overseas Communication.** Indian Overseas Communication Service is responsible to provide, operate, maintain and develop India's overseas telecommunication service with other countries.

(5) **Akashwani.** All India Radio (AIR) is a medium of communication which broadcasts a variety of programmes such as educative, informative, of entertainment, advertisement, news and report. Those who have radio sets can tune in with a station from which they like to hear programmes.

(6) **Doordarshan.** Doordarshan or Television also telecasts programmes of a variety that are being broadcast by AIR. The only difference between the two is that of vision. Radio programmes are of audio type whereas Television programmes are audio-visual type which means we can hear and see. Both Akashwani and Doordarshan media have effective communicative ability.

(7) **Song and Drama Division.** This is a division utilised for making masses aware of various national programmes and objectives through live performances of songs and dramas.

(8) **Directorate of Advertising and Visual Publicity.** Directorate of Advertising and Visual Publicity (DAVP) is a central agency for undertaking mass advertising and visual publicity campaigns through press, printed publicity material, outdoor publicity items, etc.

(9) **Press.** Government policies are carried to masses through this media. Alongwith this the primary function of the Press is to create awareness among the masses about their rights and duties, feed information to them, as also provide entertainment. Public is also free to use columns of newspapers to voice their grievances or appreciate good work. Press functions through Registrar of Newspapers for India, Press Information Bureau and Press Commission of India, Press Council and Non-Aligned News-Agencies Pool are instruments for collecting and disseminating information.

Training

Training in any trade leads a person towards attainment of perfection in a chosen field. The various establishments and organizations mentioned above do require services of trained personnel because services provided by them are highly technical and specialised. For training of personnel in Posts and Telegraph there are four residential training centres at Saharanpur, Vadodara, Mysore and Darbhanga. The staff under training gets stipend per month. There are also regional and district training centres to take care of training of personnel of that region or district. In addition to all these training centres there is a Postal Staff Training College of India at Sanchar Bhavan, New Delhi, for candidates who qualify Indian Postal Service Examination for two years after

which they are posted on responsible senior posts as administrators and policy makers. There is also advanced Level Telecommunication Training Centre, New Delhi, responsible for training of personnel in telecommunication service. Here officers serving in other departments like Police Wireless Wing, Indian Telephone Industry, Hindustan Cables, Hindustan Teleprinters are also trained.

Film and Television Institute of India set up at Pune imparts training in the art and technique of film making. Courses taught at the institute are diploma in Cinematography with specialization in either picture photography or film editing, sound recording and sound engineering and post-diploma in film direction besides acting. Selection of candidates is made through a competitive examination followed by special aptitude tests and interview.

The Wireless Planning and Coordination Wing of Ministry of Communication conducts courses for awarding First, Second and Special Class Radio Telegraph operators Certificate and License for employment in ships and aircrafts to work as radio officers, wireless/radio operators. However, it is not a guarantee of providing employment after passing the examination.

Indian Institute of Technology also offers courses as Bachelor of Technology in electrical engineering including communication and Master of Technology in the same subject with a further provision of doing Ph.D.

Indian Institute of Mass Communication, Delhi, offers a post-graduate diploma course in Journalism with a view to impart theoretical and practical skills in various branches of journalism and communication. Rajendra Prasad Institute of Mass Communication also offers courses of Diploma in Journalism, Public Relations, Advertising and Marketing through its colleges at Bombay, New Delhi, Bangalore, Ahmadabad, Madras, Cochin, Guntur, Hyderabad and Mangalore.

Staff Training Institute (Tech.) AIR, imparts training to its technical staff at initial stage of their appointment as well as refresher courses for serving employees to keep them abreast of the new technology. Civil Aviation Training Institute, Allahabad trains radio technicians and radio operators already in service. Institute of Radio Physics and Electronics, Calcutta runs B. Tech. & M. Tech. courses in Broadcasting and Television Engineering. Indian Telephone Industry, Bangalore, trains apprentices in communication technology.

Employment Opportunities

(1) **Post and Telegraph Department.** There are two types of services in this department as Group A and Group B. Group 'A' covers Telegraph Traffic Service, General Central Service and Indian Post and Telegraph & Accounts Service. Group 'B' covers Postal

Superintendents' Service, Post Masters' Service, Telegraph Traffic Service, Telegraph Engineering Service, Post and Telegraph Accounts and Finance Service and General Central Service.

Union Public Service Commission conducts competitive examination as part of the Civil Service Examination for recruitment to the above services. However, fifty per cent posts are for promotion.

Other lower grades of posts like Postmen, Head Postmen, Post Master/Sub-post Masters, Mail Guards, Mail Agents, Mail Sorters, Postal Clerk, Stores/Checkers/Clerks, Platform Inspectors, Head Sorters, Record Clerks, Branch Supervisors, Inspectors of RMS, Assistant Superintendents are available in the Post and Telegraph Department recruitment to which is made through advertising these posts on the basis of number of marks secured in the qualifying examination and promotion.

(2) Telegraphic Service. Occupational openings in this department are that of Telegraphist, Telegraph Messenger, Telegraph/Telephone Cable Splicer, Telephone Line Inspector, Manager Communication/Manager Telephones/Telegraph Superintendent, Telegraph Engineer, Telephone Engineer, Telephone Mechanic, Lineman, Telephone Supervisor, Fault Controller, Wireless Operator, Repeat Station Assistant, Auto Exchange Assistant, Wireman etc.

(3) Telecommunication Services. Wireless Operator, Wireless Supervisor, Wireless Licence Inspector, etc.

(4) Overseas Communication Services. Telegraphic Microwave Engineer, Overseas Communication Engineer, Assistant District Engineer, Director/Deputy General Manager, Deputy Director General/General Manager Communication, Regional Controller, Assistant Manager, Architect/Assistant Surveyor of Works/Assistant Technical Examiner, etc.

(5) All-India Radio and Doordarshan. Music Composer, Film Editor, Film Projectionist, Designer, Production Assistant, Make-up Assistant, Presentation Announcer, News Reporter, Producer, News Correspondents.

(6) Directorate of Advertising and Visual Publicity (DAVP). Junior Technical Assistant, Field Exhibition Officer, Chief Exhibition Officer, Technical Assistant, Production Manager, Deputy Director, Research Assistant, Art Executive, Chief Modeller, Senior Artist, Assistant Media Executive.

(7) Film and Television Institute Pune. Director, Deputy Director, Professor, Associate Professor, Assistant Professor, Motion Picture Printer Operator, Make-up man, Instructor, Recording Assistant, Demonstrator, Editing Assistant, Joiner, Film Checker, Bookman, Controller-cum-Chief Producer, Additional

Controller-cum-Chief Producer, Assistant Cameraman, Artist, Assistant Layout Artist, Recordist, Assistant Editor, Editor, Laboratory Supervisor, Technical Officer, Laboratory Assistant, Dark Room Assistant, Photographer, etc.

Appointment to the posts is made through UPSC, Employment Exchange and advertising posts in news papers. Candidates are advised to go through the details of qualifications, age and other service conditions applicable to each and every post.

CHAPTER 21

CAREERS FOR CRAFTSMEN

Jobs of higher category require higher education, long preparation which in turn require adequate financial support to sustain the period of unemployment/preparation. Alongwith one should have to look to other aspects of level of intelligence, aptitude also. There are very few people who can aspire for higher learning and consequently for higher jobs. Ultimately in majority of cases it boils down to the hard fact that because of weak financial conditions a majority of people wants jobs which can make both ends meet. No doubt, there are facilities which can support lengthy preparation. Still, there are people who cannot take benefit of such facilities because they are damn in need of earning their bread. Earlier the better. That is why it becomes necessary to find employment in quickest possibly way.

Because of rapid industrialization and specialization the opportunities offering white collar jobs are shrinking but on the contrary there are many employment opportunities in blue collar jobs for which there is a persistant demand. However, for reasons unknown or say the force of traditional trend the aspirants for white collar jobs are more who throng universities and colleges for higher academic learning the result of which is that they face acute unemployment problem because such jobs are far less in number than the number of aspirants. Therefore, the only alternative left to them is to go for such jobs which might require less time for preparation, less financial requirement and somewhat easy entry into occupations.

These are the jobs of craftsmen or sometimes called production workers.

There are two ways of getting trained in these trades or occupations: (1) Institutional Training imparted in Industrial Training Institutes which offer very many courses and (2) Apprenticeship Training which also offers very many opportunities of training. Information about these two training schemes is given in brief below:

Institutional Training. Under the control of State Governments Industrial Training Institutes impart training to trainees admitted for various engineering and non-engineering trades as

required under the Craftsman Training Programme. In India the number of ITI's by Dec. 1982 stood at 1084 with an intake capacity of 2.23 lakh comprising numerous trades. The aim of imparting training to trainees is to equip the trainees for suitable industrial employment and self-employment. Since there is a stress on self-employment accordingly certain schemes for the purpose have been drawn up. It has been decided by the Government to impart training in self-employment during the last six months of the training courses. National Council of Vocational Trades have prepared syllabi which include all relevant information about self-employment including credit and other facilities, management of project and other relevant details.

All trainees admitted into the ITI's are given free training, free workshop clothing at six monthly interval, free recreation and medical facilities. Candidates for admission are selected by a committee constituted for the purpose. Candidates admitted in the institutions have to give an undertaking about good discipline, taking care of tools and equipments entrusted to them and continuation of the course till its completion. If they fail to fulfil the terms of the undertaking the Government has a right to recover from them the expenses incurred on their training or loss of amount as it might deem fit. They are also given free hostel accommodation without supply of food for which candidates have to make their own arrangements.

After completion of the prescribed duration of the course they have to appear for the final All-India Trade Test conducted by the National Council for Vocational Trades and successful trainees are awarded National Trade Certificates. These certificates are recognised by all Governments and other establishments for recruitment purposes of craftsmen and artisans. The age limit for admission into these institutes is 14 to 25 years with usual relaxation to special types of applicants.

Those trainees who have completed their training in designated trades can also take apprenticeship training under the Apprenticeship Act 1961. Such apprentices are given remission of training period of institutional training and the remaining period of apprenticeship will be required to be treated as apprenticeship training. Such apprentices are eligible to receive stipend pertaining to the year of apprenticeship training.

There is a provision that private candidates may also appear for the trade test conducted by the National Council for Vocational trades provided they fulfill all the conditions applicable to ITI trainees pertaining to educational qualifications. However, age and educational qualifications can be relaxed in deserving cases where they are otherwise suitable. Such private candidates must possess three years experience in the trade in which they want to appear and will have to produce a certificate to this effect from their employer. They have to apply for the purpose to the State Director-

in-Charge of Training on a prescribed form and paying a prescribed examination fee.

There are good opportunities for trainees to get employment in various industries under the Government or private ones. All these industries insist on a trade certificate.

Details of Qualifications, duration of the course are given in the following table:

Table No. 9

<i>Trade</i>	<i>Qualifications</i>	<i>Duration</i>	<i>Trades</i>
I(a) Engi- neer- ing Trades	Should have studied up to the standard below secondary school or equivalent examination	1 Year	Blacksmith, Welder, Sheet Metal Worker, Moulder, Carpenter, mechanic Motor vehicle, Mechanic (Tractor), Mechanic (Diesel), Upholsterer, Plumber, Painter.
(b)	As above—Desirables—SSC passed with Science Subjects	2 Years	Fitter, Turner, Machinist (Miller), Machinist (Grinder), Machinist (Shaper, Slotter), Machinist (Composite), Wireman, Building Constructor.
(c)	SSC with Science Subjects	2 Years	Electrician, Air-Conditioning and Refrigeration Mechanic, Draftsman (Civil), Tool and Die Maker, Radio and T. V. Mechanic, Draftsman (Mechanical), Millwright, Instrument Mechanic, Mechanic (General Electronics), Surveyor, Watch and Clock Mechanic, Electro-plater, Pattern Maker, Wireless Operator.
II	Non-Engi- neer- ing trades	Should have studied upto two classes below secondary school certificate examination	1 Year All the trades that have been given just below Table No. 2.

For those who cannot avail of the institutional facility of craftsman's training because of one reason or the other may go for apprenticeship training in the industrial establishments provided they qualify the test administered by the employer. Every employer, under the Apprenticeship Act, 1961, has to engage apprentices in various trades as per the ratio determined on the strength of the employees at present working with them. Opportunities for apprenticeship are open to all those who are above the age of 14 years and are physically fit. Admissions are effected twice in a year during February and August each year.

Recruitment of apprentices is made either of fresher candidates or passed out trainees of ITI's. The entire responsibility of recruiting apprentices is that of the employer. The vacancies are advertised in leading newspapers or inviting nominations from the Employment Exchanges. The dual benefit of such training is that candidates get training and also stipend so that they can support their families monetarily. The rate of stipend varies from year to year of training. For the first year they get Rs. 230/-, second year Rs. 240/-, third year Rs. 250/- and for the fourth year Rs. 300/-.

By the end of December 1982 there were 12,428 industries which were engaging apprentices and the number of such apprentices engaged by the time was 124,165. By these figures it will easily be understood that what potential of employment is available to craftsmen who are the institutionally trained or trained under the Apprenticeship Act.

All the apprentices will have to execute a contract of apprenticeship with the employer and registered with the Apprenticeship Adviser. They can appear for the final trade test conducted by the National Council for Vocational Trades. It must be remembered by the apprentices that it is not obligatory, either on the part of employers to offer them employment or apprentices to accept employment under them.

The details of qualifications and duration of training are given below:

Table No. 2

Sl. No.	Qualifications	Duration	Trade
1.	Should have studied upto two standards below secondary school certificate examination	3 Years	Fitter, Turner Machinist (Miller, Shaper, Planer, Grinder) Lineman, Wireman, Welder, Mechanic (Motor Vehicle, Diesel, Tractor), (Desirable—SSC with science subjects).

<i>Sl. No.</i>	<i>Qualifications</i>	<i>Duration</i>	<i>Trades</i>
2.	Should have studied upto two standards below secondary school certificate examination	3 Years	Blacksmith, Wireman, Pattern Maker, Moulder, Sheet Metal Worker, Carpenter, Plumber, Mason.
3.	—do—	4 Years	Mechanic (Earth Moving Machinery).
4.	—do—	3 Years	Letterpress Machine-man, Book Binder, Steward.
5.	Should have passed VII Class	6 Months	Weaver
6.	Should have passed V Class	1 Year	Brick Layer
7.	Should have passed V Class	6 Months	Doffer-cum-piecer, Tenter.

There is no restriction on employers to pay enhanced rate of stipend.

Young people may think of these training facilities to become a craftsman.

In addition to the above engineering trades there are non-engineering trades as mentioned below:

(1) Bleaching, Dyeing & Printing, (2) Book Binding, (3) Cane, Willow and Bamboo work, (4) Cutting and Tailoring (Men and Women), (5) Embroidery and Needle work, (6) Hand Weaving of Fancy and Furnishing Fabrics, (7) Hand Weaving and Newar Tape, Durries and Carpets, (8) Hand Weaving of Woollen Fabrics, (9) Knitting with Machine and Hand, (10) Manufacture of Footwear, (11) Manufacture of Household utensils, (12) Manufacture of Sports Goods (Leather, Wood and Miscellaneous), (13) Manufacture of Suit-cases and other Leather Goods, (14) Preservation of Fruits and Vegetables, (15) Printing Machine Operator, (16) Weaving of Silk and Woollen Fabrics.

Employment opportunities for some of the courses lie in Textile Mills, Khadi & Village Industries Commission, Leather Goods Manufacturing Companies, Printing Presses, Cold Storages and Bottling Companies, Food Processing Companies. However, most of the people trained in these trades can start their own business and earn a lot. All these courses offer an opportunity to support family income by preparing/manufacture of various items for domestic consumption. All these occupations will not be available in all the ITI's but are specific to some depending upon the locality of raw material available and concentration of industries requiring trained people for employment.

Table No. 3
Employing Establishments of Craftsmen

Sl. No.	Trade	Establishments
1.	Electrician	Railway Workshops, Public Works Departments, State Electricity Boards, Power Houses, Hydel Stations, Radio and TV Stations, Cinema Houses, Hotels, Industries manufacturing electrical equipments, machinery and appliances, self-employment.
2.	Air-conditioning and Refrigeration Mechanic	Manufacturers, suppliers and repairing workshops, railways, dairy industry, cold storages and self-employment.
3.	Draughtsman (Civil)	Govt., public undertakings, local bodies, railways, engineering/architectural/constructional firms and self-employment.
4.	Tool and Die Maker	Manufacturers of cycles, sewing machines, telephone instruments, machine tools, machinery parts, iron and steel industry, workshops of aircraft, ships, railway coaches and wagons, automobile and self-employment.
5.	Radio & TV Technician	Manufacturers of Radio & TV Sets, Broadcasting/Telecasting stations and self-employment.
6.	Draughtsman (Mechanical)	Railways, Ordnance factories, automobile plants, oil refineries, iron and steel plants, machine tool factories, textile and sugar mills and self-employment.
7.	Millwright	Railway workshops, steel plants, Ordnance factories, oil refineries, automobile workshops, paper mills, sugar and textile mills and self-employment.

<i>Sl. No.</i>	<i>Trade</i>	<i>Establishments</i>
8.	Instrument Mechanic	Instrument manufacturing factories—National Instrument Factory, Calcutta; Hindustan Machine Tools, Bangalore; Ordnance Factories, Hindustan Aircraft Ltd., Bangalore, Fertilizer and Chemical Ltd., Sindri; Indian Telephone Industry, Bangalore. Can also start his own repairing shop.
9.	Mechanic (General Electronics)	All India Radio, Civil Aviation Dept., Post & Telegraph, Wireless Police Dept., National Physical Laboratory, New Delhi; Electronics Corporation of India Ltd., Hyderabad; Indian Telephone Industries, Bangalore; Private manufacturers of TV sets, calculators, computer sets, electronic watches and self-employment.
10.	Surveyor	Central and State Public Works Departments, Survey of India, Geological Survey of India, Land Record Department, local bodies, railways, town planning, housing boards, private construction companies.
11.	Watch and Clock Mechanic	Watch and clock manufacturing, industries, can start own repair shop.
12.	Electroplater	Manufacturers of plumbing fixtures, electric appliances, Radio & TV. automobiles, kitchen utensils, hardware items and his own electroplating shop.
13.	Pattern Maker	Foundries and workshops of railways, ordnance factories, public works departments, Hindustan Aeronautics Ltd., Hindustan Machine Tools and self-employment.
14.	Wireless Operator	Defence establishments, Shipping Corporation of India and other shipping companies like Mughal Lines, Chaugule Steamship, Civil Aviation and Police department.

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|-----|-------------------------|---|
| 15. | Fitter | Govt and private industries, railways, ordnance factories, dockyards, automobile plants, oil refineries, iron and steel mills and self-employment. |
| 16. | Turner | As above |
| 17. | Wireman | Railways, Central and State Public Works departments, electricity boards, power houses, electrical contractors, hotels, cinema houses, industries, manufacturing electrical equipments, machinery and appliances and self-employment. |
| 18. | Machinist | Railways, ordnance factories, automobile plants, oil refineries, machine tool factories, various other manufacturing industries, shops and self-employment. |
| 19. | Machinist
(Grinder) | In addition to above—manufacturers of motor cycles, scooters, bicycles, aircrafts, shipyards, etc. |
| 20. | Building
Constructor | Construction companies, public works departments, housing boards and self-employment. |
| 21. | Farm Mechanic | Manufacturing of agricultural machinery and farm equipments and self-employment. |
| 22. | Tractor Mechanic | Tractor manufacturing companies, agro-servicing centres and self-employment. |
| 23. | Motor Mechanic | Automobile manufacturers, motor garages, State Road Transport Corporations, police vehicle workshops, transport companies and self-employment. |
| 24. | Diesel Mechanic | Diesel engine manufacturing companies, Police vehicle workshops and self-employment. |
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<i>Sl. No.</i>	<i>Trade</i>	<i>Establishments</i>
25.	Moulder	Foundry workshops.
26.	Painter	Automobile manufacturing companies, scooter/motor cycle/cycle manufacturing companies, refrigerator manufacturing companies and self-employment.
27.	Plumber	Public health departments, municipalities, corporations, railways and self-employment.
28.	Sheet Metal Worker	Railway coaches and wagons factories, motor body builders, vehicle manufacturing companies, iron and steel companies, dockyards, aircraft manufacturing companies, etc.
29.	Welder	All manufacturing companies, railways, state transport corporations and self-employment.
30.	Blacksmith	All vehicle manufacturing companies and self-employment.
31.	Carpenter	Furniture manufacturing workshops and self-employment.
32.	Upholsterer	All vehicle manufacturing companies, State Road Transport Corporations and self-employment.

CHAPTER 22

CAREER OPPORTUNITIES IN SCIENCE AND TECHNOLOGY

The Seventh Five Year Plan Document enunciates basic objectives of planning as (1) removal of poverty, (2) building of a modern society, (3) attainment of self-reliance and (4) building up modern India free from fear of want and exploitation. It has well been experienced by India where dependency leads to when she was under subjugation of the British. We were turned into slavish people who shunned self efforts and were under constant fear of shortage of requirements and utmost exploitation—exploitation to the extent of fleecing to the skin. Because of our valiant and brave efforts we wriggled out of the muddy quagmire and immediately after Independence decided firmly to take recourse to planning to erase the situation that blurred our vision of freedom. Not only that we decided to plan, but we confidently believed that effective planning is based on a vision of future by making use of science and technology. The overall and major objective of the successive Five Year Plans was to ensure growth of employment opportunities faster than the growth of labour force.

In the rush of things for the achievement of coveted objective we, no doubt, concentrated on erecting the infrastructure, however, we paid much less attention to a single but dominant resource *i.e.* human resource. Not that it was a blunder on the planners' side, yet this became more or less a stumbling block in the faster growth and development of the nation. This has dawned on us now and timely which has been reflected in the creation of a new Ministry of Human Resources Development which supposedly facilitates development of the human potential to its maximum in terms of self-respect, self-reliance and self-dignity.

India has a long and distinguishing tradition in science and technology. At the time of Independence our industrial and technological base was very narrow. However, since then its infrastructure was created. Its accomplishments are seen in atomic energy, space and electronics, wherein Indian scientists and technologists raised national expectations. We have well understood that true contribution of science endows a nation with competence and confidence. Through these efforts India was amply rewarded. It needs no emphasising that per capita income and quality of life that the nation enjoys largely depend on the technology that we adopt.

As a consequence and awareness of the fact a major and necessary thrust was given to areas such as environment, ocean development and non-conventional sources of energy during the 6th Five Year Plan—a significant approach of planning—many new organizations were established in the form of Department of Environment in 1980, Commission for Additional Sources of Energy in 1981, Department of Ocean Development in 1981, Department of Non-Conventional Energy Sources in 1982, Cabinet Committee on Science and Technology in 1981, Science Advisory Committee in 1981, National Biotechnology Board in 1982, National Science and Technological Entrepreneurship Development Board in 1982, National Council for Science and Technology Communication in 1982. These new organizations were created obviously to initiate, promote, develop and strengthen science and technological activities in the country.

Earlier, we have referred to human resources development. It is true that creation of training facilities in educational or training institutions will equip science and technological manpower to do the jobs thrown by its application efficiently. However, to give more sting to efficiency while considering human potential, we should remember that adequate opportunities should be made available to each individual to express his potential the right way. There are many factors that help discover such latent capacities which could be relied upon instead of asking young people to try their luck wherever occupational opportunities lie for them. This will unnecessarily force them to waste their potential. The importance of career planning should be fostered at an early age of our young generation and suitable atmosphere should also be created for causing smooth entry into occupations.

There is a growing awareness of a need to promote proper environment as a part of development of human resources for scientific work so that scientists and technologists will work with application, devotion, zeal and without feeling frustrated within the existing facilities and amenities.

Government have announced the Technology Policy statement in January 1983 which covers a whole range of issues relating to technology viz. indigenous development, assessment, forecasting, import and subsequent absorption, adaption and further development, fiscal aspects, etc.

Because of concerted efforts and through agricultural extension programmes to popularise new methods and techniques of cultivation among Indian farmers we made a significant break through leading to major accomplishments in agricultural produce of every kind which in turn had a significant impact on socio-economic progress and promoting self-reliance. Scientists were allowed freely to move into new areas of repatterning agriculture to increase productivity. At the same time basic research in agriculture too has its own impact.

Nuclear energy capabilities have now been established covering entire nuclear cycle *i.e.* exploration, mining, extraction, purification and conversion of nuclear materials. While concentrating on these things India's most coveted aim of using this energy for peaceful purposes was not lost sight of. In this regard nuclear scientists and institutions like Madras Atomic Power Plant and Bhaba Atomic Energy Research Centre have made a recognised contribution.

India entered into the new space science and technology with an indigenous base. This activity was taken because of clear realization that space systems have an inherent edge over conventional, purely ground based systems. Indian scientists became an apple of an eye when they launched a space craft APPLE into the earth's orbit. The success of this activity lies in the fact that the APPLE was indigenously designed and fabricated for its experimental communication. Immediately after launching this experimental communication system India succeeded in launching Bhaskara II-A remote sensing satellite in November 1981 and Rohini Satellite in April 1983. There were three more projects got underway during the plan period viz. Indian Remote Sensing Satellite, Augmented Satellite Launch Vehicle and Polar Satellite Launch Vehicle.

The Indian National Satellite—IB is a multipurpose satellite with activities covering telecommunication, radio and TV broadcasting and meteorology. The Indian Space Research Organization worked on. This has made it possible accurate information about fluctuations in weather, forecasting of cyclones or storms and instant messages transmitted to avert impending dangers, even natural calamities and catastrophes. Approach to common people through national network of Radio & TV has become very effective. To cap all the successes in the field up till now Indian Cosmonaut Wing-Commander Rakesh Sharma wrote a brilliant page Indian space research history by taking trip on SOYUZ-SALYU₁ Mission along with Russian Cosmonauts at the auspices of Russian Space Research Programme. He conducted experiments in the space alongwith his colleagues.

Space programmes are on the increase now in their operation as a result of which new developments arise which relate to the fullest utilization of the operational capacities in the field quoted above. When Indian Remote Sensing Satellite becomes fully operational in 1986, it will indeed be a major element in a space-based remote sensing system for national natural resource survey and management in agriculture, forestry, geology, hydrology and meteorology which is the job of National Natural Resources Management System.

Forests, agriculture, space and interior of earth has been utilised for developmental activities. In comparison oceans were not much exploited except shipping and somewhat off-shore fishing. From the view point of national security, ecological equilibrium, source of food, mineral, biological and chemical sources oceans

have abundant value. Because of awareness of the fact Department of Ocean Development was set up in the 6th Plan the job of which was developing, harnessing and preserving ocean resources. As a result of this effort, Indian scientists undertook four expeditions to Antarctica.

There are efforts in intensification of research in high priority areas for initiating and supporting major national opportunities in immunology, visceral mechanisms, plasma physics etc. National Institute of Immunology was set up in the Sixth Plan. Further three Regional Sophisticated Instrumentation Centres were set up at Nagpur, Chandigarh and Shillong for making available sophisticated research equipments and instruments for the use of scientific community. Science and technological councils have been set up in 18 States and four Union Territories. We have made a good beginning in areas like earth and atmospheric sciences, calibration facilities, instruments development, composites and fibres and information system.

The developmental activities in bio-technology have proved exceedingly useful in agriculture, medicine and industries.

Science and Industrial Research guided us towards exploration of oil—substance of commercial value—sometimes termed as black diamond. Processes regarding this oil were developed by National Chemical Laboratory, Pune; Petro-Chemical Corporation Ltd., Baroda; Cochin Refinery and Salimpur Aromatic Complex; Regional Research Laboratory, Hyderabad; Central Electronics Engineering Research Institute; Regional Research Laboratory, Jorhat; Central Electro-Chemical Institute; National Aeronautical Laboratory; Institute for Microbial Technology, Chandigarh; Regional Research Laboratory, Bhopal; Council of Scientific and Industrial Research Complex, Palanpur; National Research Development Corporation and Central Electronics Ltd.

In the area of medical research a significant headway has been achieved. Indian Council of Medical Research—a premier institution and apex body was long back set up for formulation, coordination and promotion of biological research presumably for improving health of the people. As a consequence a network of Regional Research Centres at 26 places was set up for human reproduction. Added to these centres was Central Drug Research Institute, Lucknow. It has been quite understood that solution to a large number of health problems lies in the development of appropriate manpower on a sufficient scale for food and nutrition, water supply, sanitation and hygiene.

For improving socio-economic positions of the people electronics and associated areas of informatics and telematics are the key areas which permeate every sector of human activity. To carry research in the fields industrial establishments like Semi-conductors Complex Ltd., Chandigarh; Steel Authority of India; Bharat Heavy

Electrical Ltd; Indian Pharmaceuticals and Chemicals Ltd; Central Machine Tools Institute; Automotive Research Association of India and Electrical Research and Development Association have been set up.

We have tried to gauge the progress that we accomplished over the years in science and technology through various efforts which was the sole contribution of the scientific and technological fraternity without whose help and efforts the picture that we witness could not have been a reality. True, that much could have been achieved and that too at a faster pace had we had asked for help from other advanced countries. However, joy of self-effort has a different tinge of satisfaction and adds to the national honour. That we did it is in itself an indicator of march towards self-reliance and self-sufficiency.

Sometimes, this science and technological community has been accused of dereliction of their duties and crossing over to other advanced countries for want of proper and adequate employment opportunities and working conditions and lucrative job prospects in those countries chosen for migration, yet a majority of them has expressly devoted themselves for their nation's developments facing all sorts of odds and turning their backs to better life outside.

At the end of the 6th Plan period we had a large stock of scientific and technical manpower—a little less than 30 lakh. However, looking to the size of population and gignatic problems that we have to face such manpower is much low. We have to increase the science and technical personnel as also stop their outward flow by ensuring them the quality and training appropriate to scientific and technological tasks. In order to achieve results at a reasonable pace and speed many organizations were set up as stated above on a diversifying principle but in this lack of coordination among them entered which led to serious shortages of qualified and trained manpower as also side tracking diversification of its activities that are not scientific and technical. This flow has to be remedied which is the aim of the 7th Plan. This will include application of science and technology to horticulture, fishery, piggyery, poultry, animal husbandry, seri-culture and post-harvest technology, energy, etc., which will create ample opportunities of employment for scientific and technological personnel that are available now and would be available in the 7th Plan period.

Science as a Rewarding Career

It is beyond doubt that a major shift of importance from other sciences of humanities, arts and of cultural base to science and technology after explosion of knowledge due to industrial revolution has occurred and come to stay offering innumerable job opportunities to people. To attract bright and motivated science and technological personnel care has to be taken to ensure a career for them so that they are not at a disadvantage. At present recruitment of these

people is made by Union Public Service Commission except Council of Scientific and Industrial Research, Indian Council of Agricultural Research, Indian Council for Medical Research, Universities and autonomous bodies like Atomic Energy, Space Electronics and others so far as public sector is concerned.

There is also rigidity in effecting promotions. However, many of the organizations have adopted flexibility in promotions in making avenues of advancement more liberal. They have introduced a scheme of promotions on assessment basis rather than post-oriented. Highest posts in the Government are being offered to them. For them retirement age has been fixed at 60 years. Efforts are also on the anvil that their carry home pay would be sizeable.

Because of these facilities and terms and conditions of employment the scientific and technological community will be able to direct their full attention to the programmes of science and technology envisaged in the 7th Plan as below.

(1) Atomic Energy. To meet long term needs of power particularly of those locations at distant places in 7th Plan includes expansion of the area of activities of Bhabha Atomic Research Centre, Variable Energy Cyclotron, Centre for Advanced Technology, Reactor Research Centre, Atomic Mineral Division, Tata Institute of Fundamental Research, Tata Memorial Centre, Saha Institute of Nuclear Physics and Institute of Physics.

(2) Space Technology. The thrust of the space programme will be to develop skills and capabilities to design and build satellites through its network centres: (1) Vikram Sarabhai Space Centre, Trivandrum; (2) Space Application Centre, Ahmedabad; (3) Indian Space Research Organization Satellite Centre, Bangalore; (4) Shriharikota Ranges, Shri Harikota; (5) Auxiliary Propulsion System Unit, Bangalore and Trivandrum; (6) Development and Educational Communication Unit, Ahmadabad; (7) National Remote Sensing Agency, Hyderabad; (8) Physical Research Laboratory, Ahmadabad. In addition to these already existing organizations a National Natural Resources Management System is being evolved as also a network of five regional centres and a few utilizations cells have also been proposed to be set up.

(3) Ocean Development. Several programmes have been proposed to start as scientific research in Antarctica, Coastal Zone Research—it is to recover and preserve resources; measurement of currents, waves and tides; study of erosion and accretion problems; harbour protection and development and environmental monitoring; acquisition of coastal research vessels. All these programmes will be undertaken in consultation with Department of Environment, Coast Guard, Fisheries Research Institute, Oil and Natural Gas Commission, Indian Meteorological Department and Navy; Marine Environmental Programme including a network of stations for monitoring pollution, weather and ocean parameters; polymetallic

Nodules Programme for deep sea mining survey and assessment of resources; Human Resources Development, Promotion of Basic Research in Marine Biology, Physical and Chemical Oceanography, Marine Geology and Geophysics, Palaeontology; Marine Instrumentation for their design, development and maintenance; development of underwater technology, etc.

(4) **Meteorology.** Programmes to expand activities of Indian Institute of Astrophysics, Indian Institute of Tropical Meteorology, Indian Institute of Geomagnetism for improved meteorological services, forecast and cyclone warnings, augmentation of computer facilities, surface and rainfall network, space meteorology, agro-meteorological advisory service will be undertaken.

(5) **Forensic Science.** Attention will be directed towards activities leading to collection of data for legal proceedings for which purpose institutes like Central Forensic Science Laboratories at New Delhi, Calcutta, Chandigarh and Hyderabad, The Institute of Criminology and Forensic Science have been set up. All the activities will cover drugs, poisons, residues from arson, food poisoning, analysis of rapes, metallic residues, ballistics, bio-essays, fingerprints, microscopic examination of sabotage, detection of forged signatures, handwriting, etc.

(6) **Police Wireless.** To diffuse the tension on police force better and effective communication system alongwith equipments for their efficiency and efficacy will receive central attention.

While considering development in science and technology, an outsider's view will not be taken but all this will form an integrated component of plan and programme of all socio-economic sector.

Young people will foretell themselves from the above facts the extent of occupational opportunities for them provided they equip themselves through education and training for such opportunities.

CHAPTER 23

CAREERS UNDER MINIMUM NEEDS PROGRAMME IN THE SEVENTH PLAN

Occupational opportunities of doctors, engineers, professional management personnel, science and technology personnel, though cannot be said to be out of common people's purview so far as their capabilities are concerned, yet, they can be a mirage to them from the view point of availability of training programmes in their vicinity and prohibitive cost of training in such occupations in addition also to length and preparation required. Where people are worried about their single meal a day all philosophy leading to betterment proves incongruent and hence irrelevant.

Indeed, programmes of high scientific and technological tenor cannot be scoffed at lightly when the other nations are galloping fast. They are arguably the must. But such programmes do not satiate the thirst of the poor. Seventh Plan, therefore, has a mix of programmes for the uplift of the poor and have designed programmes which are need based.

The Minimum Needs Programme has been the aim of all the Five Year Plans that have been launched but as a matter of fact, was introduced in the first year of the Fifth Five Year Plan. The objective of the programme is to establish a network of basic services and facilities of social consumption in all the areas upto nationally accepted standards and norms within a stipulated time-frame. Obviously, such a programme is devised and designed to help raising standard of living of millions of the poor people as also reducing regional disparities in development. The programme basically is an investment in human resources.

As per sociologists basic needs have been categorised in different ways but such a categorization is of little consequence barring philosophical approach. Government have identified certain basic needs of people in the fields of Elementary Education, Adult Education, Rural Health, Rural Water Supply, Rural Roads, Rural Electrification, Rural Housing, Environmental Improvement of Urban slums and Nutrition. During the 6th Five Year Plan in many areas targets fixed were exceeded a little over expenditure that was outlayed. Here an attempt is made to survey the progress

made over the years and the expansion activities that have been planned during the 7th Plan throwing substantial job opportunities well within the rural folk as well as slum dwellers.

(1) Elementary Education. One of the Directive Principles of our constitution directs compulsory education for children within the age-group of 6-14, the objective being elementary education as early as possible. The 6th Plan enrolment target was fixed at 18 million additional children for elementary education whereas the achievement much exceeded the target. It is reported that 22 million children got elementary education. It was revealed that girls were found to be non-starters and drop-outs which causes concern. This has to be remedied in the 7th Plan. This Plan gives an overriding priority to elementary education. To achieve the goal of this universalization of elementary education over 50 million children will be enrolled during the plan period so as to enable them to acquire functional literacy to help them in their socio-economic activities. This will increase in appointing teachers and supervisory staff.

(2) Adult Education. Many children do not attend schools because of pressing necessities force them to go for work to earn their bread and support their families and relieve such families of expenditure on their education. Such school escapers have to be educated. The programme designed for their education is Adult Education Programme. During the 6th Plan 100% literacy among the productive age-group of 15-35 was achieved. To achieve the target 356 rural functional literacy projects, 360 voluntary agencies, 49 universities and 13,000 centres of adult education were involved in the programme. It is gathered that about 20 million persons might have been covered out of 100 million adult illiterates.

Eradication of adult illiteracy and the development of a programme of continuing adult education is a major thrust in the 7th Plan. The job is a formidable one. Once a man is past his school-going age he develops aversion to education. Hence, motivation of such a learner is a crucial factor for success of the progress through a mass movement involving political and social organizations, voluntary agencies, students, teachers, public at large, Village Panchayats, Mahila Mandals, community centres, Nehru Yuvak Kendras and National Student Service. Even though targets have not been fixed but basing on the past experience more number of adults will be covered under the programme which, in turn, will generate some employment opportunities at least of part-time nature.

(3) Rural Health. For providing health care facilities the infrastructure was strengthened during the Sixth Plan. Against the target of 47,000 sub-centres to provide preventive and promotive health care measures during the Sixth Plan, the achievement was 35,509, less than the target fixed. This is due to more attention paid to infrastructure. However, there was a significant achievement

in establishing 3702 Primary Health Centres as against the target of 1600, more than the double. The same is the case of Community Health Centres which were 400 as against fixed 174. The main difficulty in the programme is non-availability of trained medical staff. However, 3.72 lakh health guides were trained for the programme.

It is proposed to further expand the programme of rural health during the 7th Plan adopting three tier approach i.e. Sub-Centres, Primary Health Centres and Community Health Centres. As per the targets fixed of the centres and trained health workers they are as following. 54,000 Sub-Centres, 12,000 Primary Health Centres and 1,553 Community Health Centres will be set up bringing the total to 1,37,000, 23,000 and 5,417 respectively. Compared to the 6th Plan targets achieved, these proposals of the 7th Plan are quite high. Hence it can safely be estimated that some 10 lakh health guides and other medical and para-medical trained personnel will be required to achieve the targets which are clear occupational opportunities for young people to prepare for.

Interestingly enough, all these centres require housing facility which will boost construction industry and make available additional job opportunities for the rural youth.

(4) Rural Water Supply. In spite of massive efforts in the 6th Plan, there are a good number of problem villages having no source of potable drinking water. The Seventh Plan, therefore, must attend to the problem of potable water first of these problem villages before extending the facility to other villages. It is the aim that potable water would be made available to villages within a distance of half a kilometer through hand pumps and pipe lines. The total number of problem villages identified for the purpose is 2.31 lakh whereas target achieved during the 6th Plan was all but 39,000 such villages. These remaining villages will be the priority target of the 7th Plan. This again will create occupational opportunities.

(5) Rural Housing. Commonly three basic needs are recognised as food, shelter and clothing. Shelter means to have an accommodation of one's own to rest one's head by night after the day's hard work. People from rural areas need such shelters. The Sixth Plan made a major contribution towards this end. Under the scheme for Rural House Sites-cum-construction Assistance, 13.07 million landless families were provided house sites which is a little over than needed families numbering 12.21 million. This is so because of inclusion of higher income group strata. It is gathered that there are still 0.72 million landless families that are to be provided house-sites.

However, target achieved for providing assistance for construction of houses is much low. Only 19 lakh families were provided such an assistance as against the target of 36 lakh. This is due to

escalation of construction cost that was fixed as a standard norm. Seventh Plan will attract the attention of 0.72 lakh landless families who were not provided house sites. In addition, financial assistance for construction of houses will be provided to a target of 2.71 million families. The norms of house sites and financial assistance has been fixed as Rs. 500/- for developed house site of 100 square yards per family and Rs. 2000/- per family for construction of a house.

Both the schemes will generate ample employment opportunities for the rural youth.

(6) **Rural Electrification.** Out of the target fixed for Sixth Plan at 46 464 villages for electrification actually 34,489 were electrified. This was the position under the Minimum Needs Programme. The overall achievement for electrification was achieved in respect of 1.28 lakh villages as against the target of 1 lakh villages. The target fixed for 7th Plan is 65% of the villages under the programme i.e. 40,285 villages. This has also a potential for employment opportunities for the rural youth.

(7) **Environmental Improvement of Urban Slums.** A long term objective that was laid down in the 6th Plan was to cover 100% of slum population and achievement during that plan covered 15.6 million slum dwellers out of a total slum population of 33.1 million. Out of the remaining slum dwellers 9 million slum dwellers would be covered during the 7th Plan. This will also generate employment opportunities in the urban areas.

(8) **Rural Roads.** The target fixed for connecting villages by road is 24,000 during the 7th Plan. The size of the targeted villages is more than 1000 population. While connecting these, villages coming enroute will also be connected to the roads. During the Plan period particular attention will be paid to hilly, tribal and desert areas. Norms for these areas will be liberalised as:

<i>Hill Areas</i>	100 per cent linkages during 10 years time of villages of 500 population or more. 50% linkages for the same period of villages of population over 200
<i>Tribal Areas</i>	100 per cent linkage of villages having population more than 1000 50% linkage of villages having population more than 500 up to 1000
<i>Other Areas</i>	100 per cent linkage of villages having population more than 1000 50 per cent linkage of villages having population of 1000-1500

This scheme of rural roads for connecting villages will create substantial opportunities of employment for young people of the rural areas.

(9) Nutrition. The nutrition programme under the Minimum Needs Programme includes (a) Special Nutrition Programme of which the objective is to provide 300 calories and 8 to 12 grams of protein for the age group of 0-6 years, 500 calories and 25 grams of protein to pregnant women and nursing mothers. During the 6th Plan 11 million beneficiaries were covered. (b) Midday Meals Programme is for school going children of the age-group of 6-11 years. During the 6th Plan 20 million beneficiaries were covered.

During the 7th Plan the achievements of 6th Plan will be continued in addition extending it to all the children of integrated Child Development Programme Centres by linking it with other inputs like health, sanitation, hygiene, water supply and education. The same case will be under the Midday Meal Programme.

Under this programme, though the component of additional employment opportunities may be less, however, it takes care of the growing children for future manpower development.

(10) Rural Domestic Cooking Energy. Cooking energy forms nearly half the total energy consumed in the country. The sources of cooking energy in the rural areas come from firewood, crop-waste and animal dung. By the rate it goes now these sources will dwindle soon. To recuperate the position Rural Firewood Plantation and improved hearths will continue in operation. 50 lakh hearths will be installed during the 7th Plan.

This programme again will generate few employment opportunities but it will offer comfort to the rural people.

It will be interesting to know-how much money is being pumped into the Minimum Needs Programme to have an idea of employment opportunities for the young people coming from the rural areas and would also show Government's concern for the poor people.

Figures in Crores

	Rs.
Elementary Education	1830.45
Adult Education	360.00
Rural Health	1096.35
Rural Water Supply	3454.47
Rural Electrification	497.08
Rural Roads	1729.40
Rural Housing	576.90
Urban Slums	269.55
Nutrition	1731.74

The total expenditure on these various programmes during the 7th Plan period comes to 11545.94 crores of rupees out of the total outlay of Rs. 348,148 crores. That is 3.32% of the outlay would be spent on the Minimum Needs Programme.

The poor rural will look forward for a good future if not a bright one which is a happy situation.

CHAPTER 24

CAREERS FOR NON-SSCS

It is reported that one out of 100 children admitted in the first standard of education passes secondary school certificate examination. Rest of the children get dropped in between. Although failure to reach the X Class cannot be ascribed solely to incapability to cope up studies but there are several other reasons foremost amongst which is financial stresses and strains and urgency to earn bread of his own and also become a helping hand to a family because of striking poverty which takes a major toll of human resources. This throws out a major challenge for both the drop-outs and the planners.

Apart from the reasons that cause discontinuation of education there is another reason which commonly comes in the way of people. That is lack of proper information or ignorance of it. It is wrongly thought that education means pursuance of academic education. People think of joining colleges for degrees in Arts, Science and Commerce as the only mode of education. How wrong they are? These people should remember Mahatma Gandhi's thought about education. He says, "Our education has to be revolutionised. The brain must be educated through hands. If I were a poet I would write poetry on the possibilities of five fingers. Why should you think that the mind is everything and hands and feet nothing? Those who do not train their hands, who go through the ordinary rut of education, lack music in their life."

Education is an invaluable source of man's welfare and progress. Progressive thinking, intellectual ascendancy, wisdom, principles of life, standard of living and behaviour etc., are solely dependent on the type and level of education. Education for mental advancement is the thought that has been rejected by the modern and pragmatic thinkers. Such a thought was traditional one which did not allow common people to advance. Man's life does not rotate round mental advancement only.

With the help of training of hands and feet, man can truly live a life. This is the thinking that has emerged after a long time and has been reflected in Mahatma Gandhi's above thought. It does not, however, mean that mental advancement has to be totally ignored or abandoned. But it is equally true that alongwith mental

advancement, other faculties of human being should also be developed, trained and advanced through other type of education.

There is no point in saying that if anybody does not get an opportunity to get education, he has no opportunities to develop and progress in life. There is other type of education which can help such candidates who cannot prosecute further studies for one reason or the other. However, looking to the magnitude of aspirants and training opportunities that are available comparatively on a lower scale, one has to get oneself prepared to face a stiff competition in matters of age, physical forbearance etc. An attempt has been made here to acquaint these candidates about the possible opportunities available for them in various fields of technical courses, commerce courses, paramedical courses, agricultural courses, arts courses, village crafts courses, opportunities of training in protective and defence forces so that with little amount of training at less cost they can prosper in their careers.

(1) Technical Courses

(A) Technical Schools. State Governments are running technical high-schools in which admission is given to those who have passed 7th standard. Those who would like to choose technical field to enter into later, this is a good opportunity for them to start their careers in these technical high-schools. There are a number of technical subjects taught in these schools like maths, physics, chemistry, geometrical machine drawing, workshop technology, mechanical and electrical engineering, woodwork technology, building construction, furniture designing and estimating, radio engineering. The final examination is conducted by the State Board of Examination and candidates passing these exams are given preference in getting admission in professional courses.

(B) Other Technical Courses. Below are given certain courses alongwith admission qualification and duration of the course. These courses are conducted by the State Directorate of Technical Education. It is not possible to give a list of such institutions which offer the courses. Candidates may approach the technical boards of their respective states for further details.

<i>Sl. No.</i>	<i>Trade</i>	<i>Qualification</i>	<i>Duration</i>
1.	Trained Mistry	Certificate in Carpentry	1 Year
2.	Tracer	7th	1 Year
3.	Handloom Weaving	4th	2 Years regular 4 Years Part-time
4.	L.C. Cotton Weaving	4th	1 Year

5.	L.C. Cotton Spinning	4th	2 Years
6.	Handloom & Powerloom Weaving	4th	2 Years regular 4 Years Part-time
7.	Wool Knitting & Weaving	4th	1 Year
8.	Practical Weaving	Literate	2 Years
9.	Artisan Industrial Leather Goods Manufacture	4th	2 Years
10.	Leather Technology (Tanning)	Literate	2 Years
11.	Restaurant & Counter Services	7th	21 weeks regular 1 Year Part-time
12.	Composing	7th	3 Years
13.	Khalasi (Sailor)	4th	3 Years
14.	Quarter Master (Ship Sailing)	Khalasi	6 months
15.	Sarang (Boatman)	Quarter Master	6 months

(C) **Crafts and Needle Crafts.** The board of technical education of each state runs some institutions for these courses which are quite in good number and cannot be given here. Other relevant information is given in the following table.

<i>Sl. No.</i>	<i>Trade</i>	<i>Qualification</i>	<i>Duration</i>
1.	Tailoring & Cutting	4th	1 Year Regular 2 Years Part-time
2.	Tailoring Courses in Women's and Children's Garments	4th	As above
3.	Practical Tailoring Courses in Women's and Children's Garments	4th	As above
4.	Embroidary and Fancy Work	7th	1 Year
5.	Master Tailor	Tailoring & Cutting Exam passed	1 Year

(D) Government Industrial Training Workshops. These workshops are meant for industrial workers. They can join these workshops in their spare time and enhance their skill and knowledge.

Admission qualification for all these courses is 4th class pass and age limit is 16 to 50 years. Duration of the courses is of one year. The trades are Fitting, Turning, Moulding, Metal Work, Tailoring and Cutting, Carpentry, Painting, Printing and Composing. The classes are held for three hours in the morning or evening. No fees are charged. On obtaining a certificate candidates are eligible to get promotion or enhanced emoluments. There are such arrangements in every State.

(E) Craftsman Training Scheme. Information of this has appeared somewhere in this book hence not given here.

(F) Part-time Courses for Industrial Workers. Information on this has also appeared elsewhere in this book and hence has not been given here.

(G) Vocational Examination for Private Candidates. Industrial workers working in various industries can appear as private candidates to examinations in various trades available in Industrial Training Institutes. They must possess at least three years' experience to become eligible to appear for such examinations. This examination is conducted once in a year. On passing the examination they are awarded a certificate by National Council for Vocational Trades. For courses in Electrician, Instrument Mechanic, Radio Mechanic, Refrigerator Mechanic, Wireless operator the minimum qualification is X Class pass. For other engineering and non-engineering trades the minimum qualification is 2 standards below X Class. These qualifications are relaxed in certain cases.

(2) Courses in Commerce

There are commerce schools through which candidates can appear for SSC Examination with commerce subject. Students passing these examinations can look for jobs of typist, stenographer bookkeeper in Government or in private organizations.

Students who have passed 8th Class of 10+2 scheme can prepare for (a) Government Commercial Diploma Exam. (GCD), which is of 2 years duration (one year after X pass), (b) Govt. Commercial Certificate Exam (GCC) which is of 4 months duration.

They can also appear for the examination in cooperative society secretaryship. Entry qualification is VIII of 10+2 pass, age 18 years. Duration of the course is of 3 months (Part-time). This course is conducted by Maharashtra State Cooperative Union. In other states it is conducted by similar cooperative unions.

(3) Para-medical Courses

Information on such courses has been given elsewhere in this book.

(4) Agricultural Courses

There are a number of Agricultural Schools in which subjects like Rural Development, Village Administration are taught. Those who pass the examination can seek employment as Patwari. Qualifications required to join this school is VIII Pass. Preference is given to X Class pass. Age limit is 18 to 30 years.

There are also Agricultural High Schools which prepare students for SSC Exam. Admission to 7th class pass students is given. The subjects taught are Village Management, Crop and Animal Husbandry etc. Other Agricultural courses and related details are:

(a) *Training in Horticulture.* 4th Class pass. Age 18 years. Duration: One year.

(b) *Training in Poultry.* Literate. Age 18 years. Short-term course of 3 months and long-term course for 9 months.

(5) Art Courses

There are courses in various arts. Details are given below. These courses are offered by respective institutions:

Sl. No.	Courses	Qualification	Age	Duration
1.	Drawing & Painting	Relevant Aptitude		5 Years
2.	Sculpture and Modelling	„	—	„
3.	Repose in Metal, Engraving and enamelling. Shape-making in Metal, Rot Iron, Carpentry and Furniture Making, Wood Carving, Stone Carving, Textile (Weaving, Dyeing and Painting); House Decoration	9th class, Traditional workers preferred	—	3 Years each course
4.	Photography, Lithography, Block Making, Interior Decoration	Not much insisted upon	—	
5.	Acting and Producing	Literate Knowing English	—	1 Year

6.	Dramatics	Knowledge of English and Hindi essential	—	2 Years
7.	Fine Arts (High School Exam. leading to SSC)	7th 8th	— —	4 Years 3 Years
8.	Home Science (High Exam leading to SSC)	„	—	„

(6) Opportunities in Police Force

Information on this has appeared elsewhere in this book. Apart from regular opportunities of employment other opportunities are mentioned below:

(I) Bandsmen

(II) Armourers—Persons found suitable and knowing metal work are chosen from amongst constables.

(III) Police Motor Transport: (a) Mechanics, Fitters, Turners, Carpenters, Blacksmiths, Electricians, Copper and Tin Smiths, Vulcanizers, Tyremen, Spray Printers, Upholsterers, Greasers, Instrument Makers.

(b) Tradesmen (First class): Promotional avenues for tradesmen.

(c) Tradesmen (Second class): Promotional avenues for tradesmen.

(d) Driver/Mechanics. Must possess Heavy Motor Driving License with three years' experience.

(e) Cleaners and Assistant Greasers. Literate and should have 2 years' experience in a garage.

(f) Watercraft. Motor Launch Drivers, Motor Boat Drivers, Motor Launch Sarangs, Sellers, Laskars, etc.

(7) Opportunities in Army, Navy and Airforce

Eligible people are recruited through a network of recruiting offices in the country. Information on this has appeared elsewhere in the book. Here only a list of occupational opportunities is given.

Army. Boys, Combatant Soldiers, Non-combatant Soldiers are recruited in the Amed Core, Army Ordnance Core, Artillery, Army Medical Core, Engineers Singals, Electrical and Mechanical Engineers, Infantry, Remounts and Veterinary Core, Army Service Core, Military Farms. Persons who have passed 4th Vernacular

standard and who are within the age-group of 14-25 are selected on the basis of physical standards. After serving a fixed period of service they are retired with facilities of pension and reservation in civilian employment.

Recruits are trained in different trades as per their aptitude in as many as 80 trades each selected through a scientific method. These trades are:

Draftsman, Engineer, Driver, Radiographer, Blood Transfusion Assistant, Lithographical Engineer, Instrument Mechanic, Photographer (Cartographic), X-Ray Assistant, Guard, Dental Technician, Dispenser, Electrician, Radio Mechanic, Surveyor, Telecom. Mechanic, Telegraph Mechanic, Electrical Fitter, Fireman, Farm Overseer, Nursing Assistant, Signal Operator, Vehicle Mechanic, Blacksmith, Moulder, Painter, Decorator, Printer, Compositor, Saddler, Harness Maker, Storehand, Baker, Cook, Carpenter, Tailor etc.

Navy. Artificer, Sailor, Radio Electrician, Power Electrician, Aircraft Artificer, Engine Room Artificer, Weapon Mechanic, etc.

Air Force. Aircraft and General Duty, Catering Assistant, Mechanical Transport Driver, Musician, etc.

(8) Rural Crafts

There are good many career openings in rural areas after getting trained in rural crafts mentioned below.

(a) *Palm Tree Products – Manufacturing.*

Sl. No. Rural Craft

- | | | |
|-----|-----------------------------|--|
| 1. | Confectionery and Bakery | All these courses are organised by Khadi and Village Industries Commission. Duration of the courses is of 4 to 6 months. |
| 2. | Palm Gur | |
| 3. | Brush Making | |
| 4. | Palm Products | |
| 5. | Organisers | |
| 6. | Instructors | |
| 7. | Propaganda | |
| 8. | Marketing | |
| 9. | Reporters | |
| 10. | Neera | |
| 11. | Candy making | |
| 12. | Fruit canning | |
| 13. | Palm Leaf Articles | |
| 14. | Date Palm Leaf Articles | |
| 15. | Tapping and Palm Plantation | |
| 16. | Sugar | |

(b) *Beekeeping*. A course is organised in Beekeeping in which persons having some experience in Beekeeping are trained for 3 months and they are paid stipend during the training period.

(c) *Fibre Industry*. Advanced Course. It is for six months with a provision of stipend. The course includes fibre making from grass, bark of trees, leaves, carding, making cords, dyeing them and weaving.

(9) Special Apprentices Training Programme

(a) *Apprentice scheme in Fisheries*. 4th Standard Pass. Duration of six months. Candidates from fishermen's families preferred.

(b) *Marine Diesel Engine Driver*. Duration of the course—3 months. Candidates from fishermen's families preferred.

(10) **Footwear Manufacturing**. Following courses are available:

Sl. No.	Courses	Qualification	Age	Duration
1.	Artisan Footwear Manufacturing	4th	16-22	2 Years
2.	Miscellaneous Leather Goods Manufacturing	"	"	"
3.	Industrial Leather Goods Manufacturing	"	"	1 Year

(11) **Handicrafts Training**. Following courses are taught:

Cotton weaving, cotton dyeing and printing, wool weaving, leather work, Lac work, fibre work, clay utensils, metal work, block engraving, willow work, blacksmithy, carpentry, sericulture, tailoring, wood work, tanning jewellery, stone carving, carpet making etc. All these courses are of one or two years, duration; age of candidates must be 14 to 30 years.

Employment opportunities for these trained people are in the rural areas, of course, and more in self-employment.

CHAPTER 25

COURSES AFTER TWELFTH CLASS

Preparation for professional career at higher level really starts after passing 12th class examination. Apart from general university courses in Indian Universities leading to most popular degrees of B.A., B.Sc., B. Com. there are a number of special courses leading to professional careers. In this age of competition it is not quite easy to get admission in such professional courses at will since admissions in these professional courses is effected on the basis of merit. There are two ways of judging merit:

(1) Performance in the qualifying examination. Boys securing sufficiently higher number of marks in these examinations are assured seats in professional courses.

(2) Performance in an entrance examination conducted by respective institutions or sometimes in combination.

Boys securing sufficiently higher number of marks in such examinations are assured seats in these professional institutions.

This clearly indicates that aspirants of admissions in these institutions and consequently of good professional careers should have to really start preparing one year or two years prior to 12th class examination so that they become competent to give the test. That being the case they would be eligible for admission to the following courses of different nature. A brief account is given below about the institutions. An attempt has also been made to give a list of employing organizations some of which also allow facilities of further studies too.

Courses of studies in different fields:

- (1) Engineering and Allied Courses.
- (2) Medical and Allied Courses.
- (3) Courses in Arts.
- (4) Courses in Commerce.
- (5) Courses in Defence Establishments of Army, Navy and Air Force.
- (6) Other courses:

(1) Engineering and Allied Courses. This has amply been discussed at various places in this book.

(2) Medical and Allied Courses. This has also been amply discussed at appropriate places in this book. However, those which were not included there are mentioned here.

(a) *Nursing.* It is a course of 3 years leading to B.Sc. Nursing. It is meant for women candidates. Relevant information can be had from Maharashtra State Nursing Council, Bombay-400001. Institutions preparing Nurses are:

- (i) Leelabai Thackersey College of Nursing, Churchgate, Bombay-400 020.
- (ii) College of Nursing, AFMC, Pune-411 001.
- (iii) J.J. Hospital, Byculla, Bombay-400 001.
- (b) *Dentistry.* 4 year course leading to B.D.S. (Bachelor of Dental Surgery). Institutions are:
 - (i) Nair Hospital Dental College. Byculla, Bombay-400 008.
 - (ii) Government Dental College, St. George's Hospital, Bombay-400 001.
 - (iii) Armed Forces Medical College, Pune-411 001.
 - (iv) Government Dental College & Hospital, Nagpur, 440 003.
 - (v) Government Dental College, Afzalganj, Hyderabad, 500 012.
 - (vi) Patna Dental College & Hospital, Patna-800 004.
 - (vii) Government Dental College & Hospital, Ahmedabad-380 019.
 - (viii) Dental Wing, Medical College, Trivandrum-695011.
 - (ix) College of Dentistry, Indore-452 002
 - (x) Dental College, Bangalore-560 002.
 - (xi) College of Dental Surgery, Kasturba Medical College, Manipal-576 119.
 - (xii) Government Dental College and Hospital, Amritsar, 143 001.
 - (xiii) Government Medical College, Patiala, 147 001.
 - (xiv) Dr. R. Ahmed Dental College & Hospital, Calcutta-700-014.
 - (xv) Madras Medical College, Madras, 600 003.
 - (xvi) Dental College & Hospital, Lucknow, 226 003.
- (c) *Naturecure.* Duration of 4 years. Institution: Gandhi Prakratik Chikithsa Vidyapeeth, Hyderabad-500 016.

(d) *Homoeopathy*. After 12th straight admission to second year of LCEH (Licentiate Certificate in Homeopathy). Institutions in Maharashtra are:—

(i) Bombay Homoeopathic Medical College, Vile Parle, Bombay-400 057.

(ii) Late Dhondumama Sathe Homoeopathic Medical College, Karve Road, Pune 411-004.

There are such colleges in other states also.

(e) *Audiology & Speech Therapy*. Duration of 3 years; leading to B.Sc. (AST) (Bachelor of Science, Audiology and Speech Therapy).

(f) *Orthopaedy*. Certificate course is of two years. Institution: Minto Ophthalmic Hospital, Bangalore-560 002.

(g) *Refraction & Optometry*. Certificate course of two years. Institution: Minto Ophthalmic Hospital, Bangalore-560002.

(3) Courses in Arts

(a) *Foreign Language*. Many universities conduct special courses in Foreign Languages like French, German, Russian, Arabic, Persian, Indonesian, Spanish, Chinese etc. Other institutions:

(i) Birla Institute of Science & Technology, Pilani 333031.

(ii) Indian Institute of Science, Bangalore-560 012.

(iii) Jamia Millia Islamia, New Delhi-110 001.

(iv) Centre of Russian Studies, J.N. University, New Delhi.

(v) Indian School of International Studies, Sapru House, Barakhamba Road, New Delhi-110 001.

(b) *Music*: B. Music—Bachelor of Music—Duration of 3 years. Institutions:

(i) M.S. University, Baroda-390 004.

(ii) Banaras Hindu University, Varanasi-221 005.

(iii) S. V. University, Tirupati-517 501.

(c) *Fine Arts*. There are a number of Art Schools Institutions imparting training in Drawing & Painting, Marketing and Sculpture, Art Master, Textile Designing, Metal Craft, Dramatics, Dance, Film Editing, Applied Art, Art Teacher's Diploma, Ceramic & Pottery, Furniture Designing, Interior Decoration, Music, Motion Picture Photography, Sound Recording. These courses are of 3 to 5 years duration. Main Institution at national level is:

National School of Drama and Indian Theatre, Ravindra Bhavan, New Delhi-110 001.

(4) *Courses in Commerce*. This has amply been covered at other places in the book.

(5) *Police, Defence Forces*. This has also been covered at other places in the book. Additional information is given below:

(i) *Merchant Navy*. Candidates are trained for Navigating Officers and Marine Engineers.

(a) Navigating Officer. Officers are trained on Trainingship *Rajendra* in control, sailing, cargo movement, maintenance of ships and care of sea passengers and crew. Entrance is through written test and interview. Age 20 years. The course is of 11 months. Director General of Shipping, Jahaj Bhavan, Walchand Hirachand Marg, Bombay-400001 invites applications for admission to the course every year. The course is to be completed at one's own cost, however, few scholarships are available. After completion of training employment is available with shipping companies.

(b) Marine Engineer. Duration of the course is of 4 years at Naval Headquarters at Bombay and Calcutta. It gives instructions in ship engines, manufacture and maintenance thereof. Admission is through a written test and interview. Detailed information can be had from:

- (i) Director General of Shipping, Jahaj Bhavan, Walchand Hirachand Marg, Bombay-400 001.
- (ii) Directorate of Engineering Training, Tartolla Road, Calcutta-700 053.
- (iii) Directorate of Marine Engineering Training, Reay Bunder, Sewree, Bombay-400 033.
- (iv) Lal Bahadur Shastri Nautical College, Reay Bunder, Sewree, Bombay-400 033.

(c) National Defence Academy. UPSC conducts a competitive Examination twice in a year—May and December to select candidates for Army, Navy and Air Force. One year prior to the commencement of the course applications are invited from candidates between the age group of 16-18 years. They are trained at National Defence Academy Pune for three years. After completion of training they are awarded a Bachelor's Degree by the Jawaharlal Nehru University, Delhi. Those who qualify they are sent for further training to:

(i) *Indian Military Academy.* Army cadets are sent to this Academy at Dehradun for one year after which they are offered regular commissions and thus become Second Lieutenants.

(ii) Naval candidates are sent to different ships for six months. For another six months they are trained in different branches. After completion of training they are commissioned in the Navy at Sub-Lieutenant's level.

(iii) Air Force candidates are trained further for 1½ years as fighting pilots at Bidar and then absorbed as Pilot officers. Candidates who have been trained in NCC are preferred for training in all the three wings of Defence Forces.

(d) Apart from the above training candidates are also recruited in the following 5 branches on different posts as:

Group I. Fitter 2 (Engine), Fitter 2 (Airframe), Wireless Operator, Instrument Repairer, Electrician Fitter (Armour), Fitter

(Mechanical Transport), Machine Tool Control and Operator, Photo Mechanic, Carpenter Rigger, Blacksmith and Welder, Coppersmith and Sheet Metal Worker, Fitter.

Group II. Flight Mechanic (Engine), Flight Mechanic (Airframe), Radar Operator, Wireless Operator Instrument Repairer, Electrician, Armour Mechanic, Transport Mechanic, Turner, Photographer, Carpenter, Air Force Safety Operator, Metallurgical Assistant, Safety Equipment Worker, Education Instructor, Cryptographer.

Group III. Accounting Clerk, General Duty Clerk, Equipment Assistant, Medical Assistant, Telephone Operator.

Group IV. Ground Training Instructor, Indian Air Force Police.

Group V. Aircraft Hand, Junior Duty Catering Assistant, Transport Mechanic, Mechanic Driver.

Detailed information can be had from the nearest recruiting office.

(e) **Combined Defence Services Examination.** Union Public Service Commission conducts this examination twice in a year for selecting candidates for the following institutions. Those who have a degree and are between 16 to 22 years of age are eligible. Institutions:

- (i) Indian Military Academy, Dehradun.
- (ii) Naval Academy, Cochin.
- (iii) Officers' Training School, Madras.

(6) Other Courses

(a) *Forestry Certificate Course.* Department of Agriculture, Government of India has framed this course of the duration of two years. Candidates who have passed intermediate examination in science are selected for training for Forest Rangers' Training Courses at:

- (i) Northern Forest Rangers' College, Dehradun-248 001.
- (ii) Southern Forest Rangers' College, Coimbatore-641 001,
- (iii) Eastern Forest Rangers' College, Kursiong, 734 203.
- (iv) Central Forest Rangers' College, Chandrapur-442 401.

(b) *Forest Officers Training Course.* Duration of 2 years after B.Sc. at Indian Forest College, Dehradun.

(c) *Indian Dairy Diploma.* Duration of 2 years at:

- (i) Dairy Science Institute, Aare Milk Colony Bombay
- (ii) National Dairy Research Institute, Bangalore-560 030.
- (iii) Allahabad Agricultural Institute, Allahabad-211 001.

(d) *B.Sc. (Dairying)*. Duration of 4 years. Institutes:

- (i) Dairy Science College, National Dairy Research Institute, Karnal-132 001,
- (ii) Bidhanchandra Agricultural University, Kalyani-741 236.
- (iii) M.C. College of Dairy Science, Gujarat Agricultural Institute, Anand-338 001.

(e) *B. P. E. (Bachelor of Physical Education)*. Duration of 3 years. Institutions:

- (i) Indian Institute of Physical Training, Amarvati-444 601.
- (ii) Sports Institute, Patiala-147 001.
- (iii) College of Physical Education, Nagpur-440 002.
- (iv) Laxmibai National College of Physical Education, Gwalior-447 003.

(f) *Bachelor of Social Work (B. S. W.)* Duration of 3 years. Institutions:

- (i) Tirpude College of Social Work, Nagpur-440 002.
- (ii) National Institute of Social Work, Nagpur-440 002.
- (iii) School for Social Work for Women, Nagpur-440 010.
- (iv) S. N. D. T. College, Pune 411 004.
- (v) Institute of Social Work, Nirmal Niketan, Bombay-400 020.

(g) *Bachelor of Fisheries Science. (B. F. Sc.)* Duration of 4 years at:

- (i) University of Agricultural Science, Hebbal, Bangalore-560 024.
- (ii) College of Fisheries, Mangalore-575 001.

(h) *M Sc. (Geophysics)*. Duration of 5 years at Indian Institute of Technology, Kharagpur-721 302.

(i) *B.Sc. (Applied Geophysics)*. Duration of 5 years at

- (i) Indian School of Mines, Dhanbad-826 001.
- (ii) University of Roorkee, Roorkee-247 672.

(j) *B.Sc. (Statistics)*. Duration of 4 years at Indian Institute of Statistics, Calcutta-700 035.

Vocational Courses for 11th and 12th class passed boys

(1) *Technical Group*. Electrical Maintenance, Scooter and Motor-cycle Servicing, Chemical Plant Operation, Mechanical Maintenance, General Contracting, Electronics.

(2) *Commerce Group*. Banking, Insurance, Office Management, Marketing and Salesmanship, Small Industries and Self-Employment, Elementary Industrial Management.

(3) *Agricultural Group*. Animal Science and Dairying, Farm Mechanics, Crop Science, Horticulture.

(4) *Catering Food Technology Group*. Cookery, Bakery/Confectionery, Food Preservation.

(5) *Fishery Group*. Fish Processing Technology, Fresh Water Fish Culture

Detailed information about all these courses can be had from Directorate of Technical Education (Vocational Cell), Bombay-400 001.

(i) Institute of Surveyors (India), Kashmir House, Delhi-110 001 conducts examination in Land Surveying, Hydrographic Surveying, Buildings, Quantity and Valuation Surveying. Detailed information can be sought from the Institute.

(ii) The Institute of Telecommunications Engineers (India) Delhi.

(iii) The Institute of Chemists (India), Calcutta.

(iv) The Aeronautical Society of India, Delhi.

Non-University Courses

There are non-university courses. For those who do not want to go for long and expensive courses, these courses are good. Here institutions given are only of Maharashtra. Similar institutions may be in other states also. Candidates should collect detailed information from such institutions.

(a) *Diploma in Agricultural Science*. This is a two year course in Agricultural Schools.

(b) *Grader*. Duration of 3 months with stipend. Directorate of Marketing and Inspection, Nagpur-440 002.

(c) *Cotton Technology*. (Fibre Testing & Statistics). Duration of 2 months at: Cotton Technological Research Laboratory, Adenwala Road, Matunga, Bombay-400 019.

(d) *Horticulture*. Duration of 4 years at:

University of Agricultural Sciences, Hebbal, Bangalore-560024.

(e) *B.A. (Rural Services)*. Duration of 3 years at:

(i) College of Rural Services, Wardha-442 001.

(ii) Rural Institute Amaravati-447 501.

(iii) Shri Mauni Vidyapeeth Rural Institute, Gargoti-416209.

(f) *Tractor Training*. Duration of 5 months with stipend at:

(i) Tractor Training & Testing Centre, Budni Tractor Nagar-466 445.

(ii) Tractor Training Centre, Hissar-125 001.

(g) *Training in Heavy Earth Moving Equipment.* Duration of one year with stipend at:

- (i) Technical Training Centre, Kakarpar-394 360.
- (ii) Technical Training Centre, Kota-324 001.
- (iii) Technical Training Centre, Nagarjun Sagar Dam-522 510.
- (iv) Technical Training Centre, Nangal-140 124.

(h) *Film and Television Institute of India, Pune-411004* conducts following courses. Admission is through a competitive examination and interview:

(i) Diploma in Motion Picture Photography—Duration of 3 years.

(ii) Diploma in Film Editing—Durations of 3 years.

(iii) Diploma in Sound Recording and Sound Engineering—One year course after Diploma in Electronics or Radio Engineering.

(i) (a) *Aircraft Maintenance Engineering.* Duration of 3 years at:

1. Air Technical Training Institute, Dumdum, Calcutta-700 052.
2. Southern College of Engineering & Technology, Chalkudi, Kerala-680 307.
3. Hindustan Engineering Training Centre, 40 North Parade Road, St. Thomas Mount, Madras-600 016.

(b) *Aircraft Maintenance Engineering (A. M. E.).* Duration of 3 years at Bombay Flying Club, Juhu Aerodrome, Bombay-400 054.

(c) *Glider Maintenance Engineer (G. M. E.).* Duration of 3 years at Birla Gliding Club, Pilani-333 031.

(d) *Assistant Flight Puner.* Duration of 6 months at Air-India, Santa Cruz (East), Bombay-400 029.

(e) *Students' Pilot Licensee.* Students are trained in flying aircraft at various flying clubs in India at:

1. The Bombay Flying Club, Juhu Airport, Bombay-400 054.
2. The Nagpur Flying Club Ltd, Sonegaon Aerodrome, Nagpur-440 002.
3. Andhra Pradesh Flying Club, Begam Peth Aerodrome, Hyderabad-500 016.
4. Amritsar Aviation Club, Raja Sangasi Aerodrome, Amritsar-142 001.
5. The Assam Flying Club Ltd., Silpukari, Guwahati-781 003.
6. Vanasthali Vidyapeeth Gliding & Flying Club, Vanasthali-304 001.
7. The Bihar Flying Club Ltd, Patna 800 001.
8. The Coimbatore Flying Club Ltd, Coimbatore 641 014.

9. The Delhi Flying Club Ltd, Safdarjang, Delhi-110 003.
10. Eastern M. P. Flying & Gliding Club Ltd, Raipur-492 001.
11. W. B. Government Flying Training Institute, Wehala, Calcutta-700 034.
12. Government Flying Training School, Jakku Aerodrome, Bangalore-560 001.
13. Gujarat Flying Club Ltd, Harni Road, Baroda-390 001
14. The Hind Flying Club Ltd, 3 Shahjahan Road, Lucknow-226 001.
15. Hissar Aviation Club, Hissar-125 001
16. Jamshedpur Cooperative Flying Club Ltd, Jamshedpur-831 005.
17. Kerala Flying Club Ltd, Civil Aerodrome, Trivandrum-695 001
18. M. P. Flying Club Ltd, Indore-452 001.
19. Madras Flying Club Ltd, Madras-600 027.
20. Northern India Flying Club Ltd, Jalandhar-144 005.
21. Orissa Flying Club Ltd, Civil Aerodrome, Bhubaneswar-751001
22. Patiala Aviation Club, Patiala-147 001.
23. Rajasthan Flying Club Ltd, Jaipur-302 003
24. Karnal Aviation Club, Karnal-132 001.
25. Ludhiana Aviation Club Ltd, Ludhiana-141 008.

CHAPTER 26

CAREERS IN SELF-EMPLOYMENT

Distinct achievements in self-employment ventures generally depend upon a number of factors pertaining to individual's talent and preferences and the contingent circumstances. Identification of potentialities in isolation to the circumstantial forces may prejudice the process. Hence these are to be considered together in promoting the cause of self-employment.

It will be useful to know what are these potentialities inset into an individual on the one hand and the contingent forces that lend their helping hand for the success on the other. It will therefore, be interesting to gather relevant information about these broad categories of factors and understand how they correlate mutually. Estimates of self-employment ventures of a particular nature will ask for certain potentials but in general, the following factors covering both the categories hold good. Schemes of self-employment howsoever sound they might appear to be, if handled by those who do not meet the requirements are bound to fail resulting in financial loss to the individuals and the economy of the nation.

I. Psychological

1. Leadership. Independent jobs or ventures need the quality of getting ahead which in other words means giving a lead. Persons possessing qualities of leadership have a remarkable talent to procure their own means, remain unmoved in the midst of threatening situations and have unwavering faith in themselves and their thinking process. The path that one wants to march is full of serious difficulties which are to be crossed over without causing any harm to anybody. The leader is one who, remains the centre of attention. He establishes good contacts with people, mixes with them, speaks in the appropriate language and protects the interests of his followers. In the self-employment ventures, he is likely to meet adverse situation in the form of certification, location, finance, market, sales outlets, transportation and many other things. He has to sort out these through his personality and imaginative handling of men he comes into contact. Not only that the quality of leadership helps in such situations, but he also provides a lead to the persons engaged to support his efforts. Distribution of tasks with specifications, quantity and quality of the products to be brought are so arranged that there would be least resistance

or any kind of grouse. He has to establish relations with governmental agencies, public at large and his employees taking him as his leader. He is the master of the situation and therefore, has to go ahead removing the difficulties. Thus the leadership quality is a must.

2. Salesmanship. A person who thinks of going in for a self-employment venture has to be a good bargainer not only to sell his products at competitive prices, purchasing raw material etc., but he must be able to sell his own ideas, thoughts etc., to customers, employees, financial bodies and the government. Selling his product would come later. Much of the salesmanship is done through the mutual discussion and conversation, advertisements, publicity, contacts with news media, detailed knowledge of the market trends and lastly salesman's own pleasing manners and etiquette. He does not know annoyance, takes bitter criticism favourably and rarely loses his poise. Adoption of stiff attitude or use of harsh words may write off his business.

3. Determination. The initial enthusiasm and initiative dry down with the passage of time and losses suffered on account of absence of proper knowledge. Such a state of affairs hastens the closing of an establishment. But the determination or the will power will sustain him. He must understand many difficulties and put in determined efforts to overcome them, overcome he will. One must remember the example of Casablanca who stood amid the burning flames by the sheer force of determination. It is with this understanding he will avoid many difficulties, nay, even will try not to allow them emerge.

4. Initiative. Since the venture of self-employment is a one column structure, one has to initiate himself at various levels as littlenegligence will bring down the whole edifice. He is less likely to depend on others not because he is a doubtful person, but those people who have been engaged by him are mere workers putting their labour for money they get. They do not have the concern because they do not suffer the losses themselves. Therefore, he has to be choosy in selecting location, type of product, quality control, cost of product, sales development aspects etc., thoroughly himself, as his stakes are the highest.

5. Sincerity and Faith. The customer is always right. The businessman must have faith in his customers. Customers, by nature, are choosy, therefore, they have every right to accept or reject the product on various grounds; be its cost, quality, availability etc. Faith, no doubt, he should have in his own employees for unless he does not do that, his path would be blocked at every step. He has to take it that every employee is good and good to the last. He should not play mischief on anybody for otherwise his prospects of advancement will be less. If he does not believe his customers, financiers, employees and the members of the public he has to suffer losses. At the same time he

must put his efforts with sincerity, mutual faith and respect etc., by taking care of every detail that carry his product or his establishment forward.

6. Foresight. While doing the business, he must, in its early stages have a look on the future and try to know the conditions or situations a few years ahead. This is necessary because technology and automation are bringing constant changes in the industrial field. The product in the present shape may require further improvement to suit the changing taste of customers. He must be in a position to know the future trends and to devise methods with the changing times. Foresight of losses or profits, development of untoward situations, selection of his employees, investment and the sorts must be known well in advance so that he can introduce preventive measures thereby there would not be occasions to suffer losses.

7. Risk-taking. Profits do not come easily. Investments are made with an eye on profits. Even in the attempt of well planned enterprise, there develop certain situations at personal, family, regional or national level which stop his attempts in carrying on his business. As he expects profits of his investment, he must be ready to suffer losses too for business is a ludo game. Due to some miscalculation or a quirk of fate, you may come back to square one. No doubt, protections are there such as insurance cover etc., but the compensation they offer is much less than losses suffered. Risks are must. Risk creates confidence and confidence is a backbone of the business.

8. Attitude. Attitude is a behavioural pattern or tendency towards people, business in hand, customers, fellow-beings etc. Adoption of soft attitude does not mean the person is wayward. The business or the enterprise should be viewed as a life's mission.

9. Organising ability. Whether the business one starts is small or big, it needs pooling of resources at one's command for its success. Emphasis should be equally laid on all factors of the organization. He has to take the people along with him who form his prospective customers. In the workplace even, he has to organise the process of production in a well-knit fashion. Organising workers is a delicate job for all of them have individual differences and to make them follow his line is almost difficult however not beyonds his capacity. He has to take care to avoid cracks in the structure where his organisational ability will come to his help.

10. Decision making. Perhaps, the most important trait that is quite in demand is to take decisions. Decisions taken have far-reaching consequences and may help the business to prosper, or decline. To take a decision requires few moments, but a lot of thinking has to go before it. Taking decisions is not a simple act, for various factors have to be considered. Good decisions are possible only when the person has detailed knowledge of the field and must have mustered enough maturity of thought. Decisions

are to be taken on the spur of the moment. Delayed decisions or half-hearted ones will throw the organization in difficulty and allow opportunities to slip out of hands.

11. Temperament. Temperament is the characteristic reaction to the call of external stimuli. Getting angry, derogating others, shifting responsibilities to cover up one's shortcomings, blaming others etc., are some of the temperamental situations which do not fit in business. Polished way of behaviour, accepting responsibility with courage, protecting interests of others are important for going up the ladder of success.

12. Other psychological factors. The intention to group certain psychological factors like aptitude, interest, intelligence etc., is not to reduce their importance. On the contrary these are the basic requirements. But since these are of common man's knowledge and are given priority, it hardly matters if they are dealt in short. The coordination of these factors bring out a multiplier effect.

II. Contingent Factors

Factors that have been stated under the first category will bear fruit if they are associated with contingent factors.

1. Physical. No doubt, physical factors are the personal assets considered earlier, but the difference lies there because the first set of factors is not seen. They are to be discovered with certain tools. The physical factors do not need any test for their discovery for they are visible alright. It is just to see whether the person entering into self-employment can deliver goods to his personal satisfaction and benefit society. Private business is not bound by any prescription of time or effort. The businessman is always on the run in bad weather, hot sun or heavy rains. Sometimes heavy work is involved. He must possess sufficient stamina, patience and forbearance to withstand physical strain and mental tensions. In view of this the physical factors are considered important.

2. Economic position of self. Money is the prerequisite for the success of any business without which no progress can be achieved. It cannot be presumed that the person should invest all his money required for the scheme at one go. Keeping some money is necessary to meet emergencies and till the profits of investment begin to flow.

3. Financial assistance. Many banks—nationalised and others adopt helping attitude in giving monetary assistance to entrepreneurs but there are difficulties still. These banks or financial bodies like industrial development corporations, small scale industries organisations etc., are facing difficulties on the recovery of loans. Very few people have movable or immovable assets which

could be attached on the failure of recovery of loans. This means whatever the loan that has been advanced, on declaration of the closure of the business, has to be written off. There is, of late, a change in the attitude of the banks to make available loans at lower rates of interests. Some banks are offering even seed money. Such facilities being available, the person in the self-employment may not face the problem of money investment because he gets full loan under one scheme or the other.

4. Social atmosphere. In fact, society has to encourage young people for their adventures but social stratification is such that sometimes artificial barriers are created. Race, caste, creed, sect or even regions are such that they prevent young people from entering into the business because their social status is at stake. Young people will have to overcome these prejudices.

5. Education and training. Education and even training-professional or technical is not considered to be an essential requirement for many industrialists have become successful without them. However, to say that education or training is absolutely not needed will be travesty of truth because one must have the capacity to understand the business deals, look to the news reports for knowing the changes in the business circle for, knowledge of this will help strategies for the growth of the enterprise. Besides, the businessman has to keep accounts by himself or carry on supervision to check wrong use of money and material. Education, therefore, is the basic requirement. As far as training is concerned, though not initially essential, but it is not difficult to acquire training in various aspects of running of business such as professional training, personnel management training, systems training, organizational behaviour, industrial relations which will only stand in good stead. If a person has acquired professional training in any one of these, it would prove an asset because at least he would be able to plan his resources in a methodical and scientific way that is suitable to the enhancement of his enterprise.

6. Availability of trained manpower. A person in the self-employment must be assured of easily available manpower that he needs for his business because it is almost impossible to carry many responsibilities by just a single person.

Self-employment as the answer to paid-employment has a lot of scope. Employment under the organised sector is just 12%. Rest is in the unorganised sector. Looking to this vast scope for self-employment, young people possessing the requisite aptitude and education and the will may start their own ventures and make sizeable contribution to the development of the economic structure of the country, besides leading a financially and temperamentally satisfying work life.

HOW TO SELECT A SMALL SCALE INDUSTRY

Selection of small scale industry is the most crucial decision and while doing so, frank assessment of one's capabilities and

resources must be done. It will be useful to find out and understand how other entrepreneurs in a certain industry succeeded or even were not so and for what possible and obvious reasons. If one analyses the causes of such failures, he may come by sufficient data which need his attention and caution for not repeating the same. Hence, honest appraisal of one's resources and approach to matters lay a sound foundation for all ventures.

Before making a choice, all relevant information should be collected comprising its scope, prospects, markets, studies and surveys of his own. How hazardous is the job can be seen from the following example—may be hypothetical.

One promising entrepreneur wanting to set up a factory for manufacturing shoes was not getting a break. He made it a point to look to the people's feet trotting on the streets and noted down various fashions, sizes, colours, make up, types, etc. After a thorough study, he pooled up his resources together and began to manufacture shoes, chappels, etc which were currently in demand. He found a ready market for his products. The labour and ingenuity that he had invested in making the survey paid him rich dividends. Another very popular example that is always mentioned about researching the market trends is that of a tea company. In the earlier days in India, people were not much inclined to drinking of tea. One innovative entrepreneur devised a plan which worked wonders for him. He took a stove and tea material and installed himself in the market place where he began to serve prepared tea to the people free of cost. After several days of service, people had developed taste for tea which after sometime transformed into a habit. Tea became their weakness. The tea entrepreneur had good market for his tea later. The point to be made is that such innovative devices have to be adopted by prospective entrepreneurs.

The Government of India have prepared a number of project profiles which have been exclusively reserved for manufacture in the small scale industries sector. Likewise, the Government have also decided to purchase required articles of day to day use in offices, establishments, etc. from the small scale industries alone. One should procure the list and then the actual books containing the detailed information about them. This certainly will make the entrepreneurs more knowledgeable and convince them finally to go for self-employment. The items have been grouped in accordance with their nature, such as:

(1) **Mechanical and Metallurgical Industries.** This group includes various types of tools, diesel engines, pump-sets for the use of farmers, agricultural equipment and implements, automobile parts, foundry equipments, domestic utensils of various kinds like pressure-cookers, various types of cutlery, zip fasteners, scientific instruments, pipes and pipe fittings, builders' hardwares, boosters, machinery and parts thereof for textile industries, etc.

(2) Chemicals. There are various types of chemicals which can be produced in a small scale sector such as organic or inorganic drugs and pharmaceuticals, dye stuffs, paints varnishes, soaps, detergents, pesticides, essential oils, perfumes, chemicals, paper conversion products, inks, polishes, adhesives, plastic and rubber products etc.

(3) Ceramics. Glass, whitewares, refractories, vitreous enamels, tiles, insulators, sanitarywares, cement, plaster of paris, abrasives and electronics, etc. come under ceramics. There is a great potential for these goods in view of rise in industrialisation.

(4) Electrical Industries. Electrical appliances, electric motors, fans, electric equipments, electrical transformers, voltage regulators and stabilizers, assembly starters and fluorescent lamps, autoelectric fuse boxes, electrical accessories and fittings, etc. are a very profitable industry and are expanding day by day.

(5) Electronics. These include radio receivers, hearing aids, electronics components like capacitors, loud speakers, volume controllers and manual switches etc.

(6) Leather Goods. They are fancy leather goods, travel goods, washers, dust sheets, buckets for tube wells, hair, wool, flushing, trimming, bones, hooves, gloves, gelatine, leather boards and casing, etc. It has tremendous scope of development in it.

(7) Sports Goods. They are foot balls, tennis and badminton, balls, rackets, hockey sticks, cricket bats and balls, basket balls, nets, rubber bladders, sports shoes, athletic equipments, sports wear, cups, medals, shields etc.

(8) Food Articles. Ice cream, dehydrated vegetables, pickles and chatneys, vinegars, rice milling, dal milling, bread, biscuit, confectionery, rapeseed oil, cashewnut products, poultry feed, ground and processed spices, etc.

These groups present a wide range of ventures to choose from for prospective entrepreneurs though imaginative and farsighted handling of finances and skills and the manpower employed will be required in all cases. The correct scientific way to go about this task is to first prepare or ask for a feasibility report on the industry you finally decide to set up.

Preparing a Feasibility Report

Any hunter on a hunting campaign is equipped with all the necessary arms and snares. Simultaneously, he makes out a plan of the hunt. It is said of Napoleon Bonaparte that before he launched upon the battle, he closetted himself for working out a plan of battle on a sheet of paper with pins used as soldiers. This was the secret of his glorious successes. The point is that thorough planning should be gone to ensure optimum results. Self-employ-

ment ventures are no exception to this rule. The plan of a self-employment venture or project is called the feasibility report—feasible means tendency towards possible, so feasibility means assessment of possibility aspect. The report that assesses the possibility of venture to get going and become successful is called the feasibility report. This in a way is an investment proposal and since it has been prepared by taking into consideration all pros and cons, it guides the entrepreneurs along the proper direction.

In preparing a feasibility report, every bit of resources has been taken into account with due respect to the present conditions and future possible situation. Self-employment venture is not a short-term or a brief task. It is so prepared that it should go on and on, giving profits. The activities that go for preparing the feasibility plan are mentioned below for the sake of guidance of entrepreneurs and action.

Different Types of Activities

A. Economic and commercial analysis to determine whether the project is sound from the point of view of economy as a whole, demand and marketability of the product.

B. Technical feasibility to determine the specifications of technical parameters realistically.

C. Financial feasibility: financial cost and returns.

Let me elucidate these.

A. Economic and Commercial Analysis

(i) **Present demand.** It is again reiterated here that one must assess the present demand for a product or service needed by the consumers. It has got two facets. If the demand is high and the products are in short supply it will give a boost to the sale of the product. What is the amount of product that is lifted by consumers should be studied on daily, weekly or monthly basis so that conclusions can be drawn for bringing out the product in the new venture. It may be that the products are in the market in some quantity but they are not in demand because they do not come up to the expectation of the consumers because of inferior quality, high cost, non-durability, easy accessibility etc. It may also be because of the purchasing capacity of the customers. So demand is of two kinds—satisfactory or unsatisfactory but it will give enough indication to one whether to go for a particular item or not.

(ii) **Facilities.** Connected with the demand is the aspect of facilities. Facilities may be of distribution outlets—own or on commission basis. This brings an element of goodwill in the market. The stockists will not undertake selling of the product unless allowed their share of profit. Besides, other sales incentives are also to be given.

(iii) **Competition.** In today's competitive world, new products have to face stiff competition and create their own place in the market. So, how many competitors are already in the market, their quality cost, facilities and concessions they offer to the stockists and customers, extent and capacity of their production, etc. are clues to the new entrant to make his final plunge in it.

(iv) **Sources of information.** The new entrepreneur is greatly puzzled over the problem of contacting sources from where he can collect information as to the demand, cost, popularity etc. for the product. Such sources facilitate the task of entrepreneurs.

(a) *Observation and interview.* Take a round of the market and see the stock available in the market, listen to what people say, observe the views of the stockists. The indirect observation will give enough knowledge about the products. Another way to know about it called market research is to interview people preferably with a prepared questionnaire or even extempore. Interview is very handy and useful because it has a direct approach to the potential customers. They give genuine views about the products.

(b) *Trade Associations.* Employers come together and form their associations to fight their cause. They plan their strategies. They plan and discuss common problems facing the industry. The new entrepreneur can contact such trade associations and through interview can elicit information. It gives not only the correct position of the industry but also the way how these people fought their way out to achieve success. One learns a lot from experiences of others.

(c) *Trade Publications.* Apart from newspaper appreciations about the upheavals in the market about certain products, there are certain newspapers, solely for the industry's sake. All sorts of information is given in such newspapers. Besides, there are a good number of trade magazines or trade publications from which authentic information can be collected.

(d) Transport agencies, municipalities, local bodies, government agencies, knowledgeable persons are some of the other sources from which relevant information can be had.

(e) *Future Demand.* Market surveys will give the present rate of consumption, but it is surely indicative of the future trends. Goods are needed by the people to satisfy their basic minimum necessities. But people do not get satisfied with this because the needs do not have an end at all. As the standard of living of people is rising their demand for more and more goods and services is also increasing. A prospective entrepreneur must have an insight and replenish it by studying the related literature on the product. The most important document in this context is the Government's publication of planning strategies which spells out yearly policies, five year plans and perspective plans. One more thing that should

not be lost sight of is to read the past trends too. Based on these basic materials, the entrepreneur will be able to build up his own policy with regard to his own products.

B. Technical Feasibility

Because of a constant change due to research, the technology also undergoes changes. Take the case of domestic appliances. The housewives are depending more and more on new gadgets to make the work in the kitchen less tiring. So, the entrepreneurs have to be alert to the latest technology, and use it judiciously to their advantage.

C. Financial Feasibility

Financial aspect is important to assess financial requirements for fixed capital and assets like land, building, machinery, equipments, raw material. Next to it is the working capital which means that amount needed to cover the cost of operating an enterprise, purchase of raw material, rent for building, expenditure on electricity, consumable stores, postage for correspondence, stationery, advertisement for publicity, transport charges, commission to the agents, insurances against fire or loss, payment of taxes, payment of wages, salaries or remunerations, overhead expenses, cost of repairs, maintenance, fuel, administration and selling expenses, etc.

One should not expect too much profit at the start of the business itself. What is needed is patience. Once the entrepreneur settles down in business, rewards will not be far behind. But to stay in business and diversify, one will have to have sharp eye of profits and keep one's finances full enough to expand on own strength.

So, do have a feasibility report before embarking upon a project. A hasty decision to bring the product in the market without necessary spade-work may prove very costly. Hence, before setting up a small industry, sit down calmly, think coolly, plan realistically and work energetically. The success will be yours.

INCENTIVES TO SMALL-SCALE ENTREPRENEURS

In the first part we have dealt with the selection and setting up small industries and as also kind, quantum and source of financial assistance of small-scale industries. But financial assistance, though very vital, is not all. It is also helpful to get assistance in raw materials procurement, processing, quality control of products and their marketing too—both within the country and abroad, if the unit is export-oriented. In this part, we would deal with these kinds of assistance to the small industries.

It is almost impossible to undertake any business, trade, enterprise, service in any capacity almost single-handedly without seeking help from others. Because of complications developed in this highly modern society interdependence has become an essential phenomenon. For the new entrepreneurs, it is needed absolutely. The type of help that is needed by them is stated below in nutshell.

1. Assistance for Raw Materials

The raw materials required by small industries have to be procured at moderate quantities. Left alone, the entrepreneurs may not be able to do this job because they cannot face the stiff competition in the market. Big industrialists, brokers, private stockists, auctioneers and the like will fleece them if there is no control in the pricing and quantity of raw materials required. To ensure easy availability of raw materials which are scarce and controlled, the Government have made arrangements to make them available to at reasonable and fixed price. Through the channels like them. Small Industries Development Corporation, Directorate of Industries etc., raw materials are distributed through the depots of State Small Industries Corporations. Such powers also have been delegated to the DIC's.

The scarce and controlled raw materials have been classified under the following four categories:

(i) *Ferrous metal*. Mild steel sheets/coils, black plates, tin plates, round bars, angles, pig iron, stainless steel, alloys etc.

(ii) *Non-ferrous metal*. Zinc, aluminium, nickel, lead, tin, copper, cadmium, brass, bronze etc.

(iii) *Chemical*. LIPE, MDEP, Soda ash, caustic soda, paraffin wax, intermediate PVC, mutton tallow, dyes, plastics, etc.

(iv) *Other material*. Raw cashew nuts, kernels, coke, coal, glass, silica, cork wood, etc.

2. Supply of Machinery on Hire-Purchase Basis

A small entrepreneur is not able to purchase whatever he requires to set up an industry from his own monetary resources. He has to depend upon the Government assistance in various ways. In addition to the problem of procuring raw materials, he faces an equally vexing problem of purchasing machinery by himself. This problem too has been solved by the Government through the auspices of National Small Industries Corporation, which helps small entrepreneurs to purchase and procure machinery on hire-purchase scheme of the NSIC. The NSIC supplies machinery and equipments. However, its role is not restricted to just making the machinery available on hire-purchase basis but it also offers training as to how this machinery is to be handled, operated and

maintained. Such training is provided to the entrepreneurs themselves or their workers deputed for the purpose. Moreover, it also offers training on transfer of know-how and testing facilities.

3. Procedure to Obtain Machinery/Equipment

The entrepreneur has to apply on the prescribed form which can be obtained from NSIC by paying the prescribed fee. The form is in quadruplicate. After getting the form filled in and keeping one copy for its record, the remaining three copies are sent to the regional office for further action. The regional office sends two copies to the General Manager of the concerned District Industries Centre. After obtaining the recommendation of the General Manager, the same application is placed before the State Level Committee. The entrepreneur has to accompany the application with the requisite fee and earnest money.

The eligibility criterion fixed for the hire-purchase scheme for purchase of machinery and equipments is Rs. 20 lakh for the Small Industries and Rs. 25 lakh for the ancillary units. The rate of interest charged varies according to the location of the unit. Where investment is upto Rs. 2 lakh the rate of interest is 11% for backward areas and 13½% for other areas. If the investment is more than Rs. 2 lakh the rate of interest for backward areas is 13% and in other areas it is 15%. A rebate of 2% is given if the instalment is paid before the due date but if the entrepreneur is not able to pay on the due date he is declared a defaulter and the rate of instalment is charged at 16½%. The entrepreneur has to furnish security in accordance with the Corporation's rules and regulations.

The advantage of this scheme is that the entrepreneurs are able to raise the capital assets without investing much from their own pocket and become owners of the assets after a period. Besides, they get training from the Corporation on how to look after their units and equipments which saves the money they would have spent on the training separately. Since the training is on the specific machinery they get installed, it gives them added benefit of its better maintenance and durability.

4. Training Facilities

Creation of employment for unemployed engineering graduates, opportunities and training thereof is necessary for diploma holders, science graduates, students, women, weaker sections, entrepreneurs from rural and backward areas.

Besides, it also organises specialised courses in finance management, marketing management, production management, export management. As and when required ad-hoc courses are also organised. In such courses the opportunities and training thereof should go together. This aspect requires judicious planning of human resources and other resources so that wastage element is reduced to the minimum.

The objectives of training in the present context are : (i) Increased personal efficiency, i.e., skills of the personnel, (ii) Professional growth, i.e., enrichment through the experience, idea and skills, and (iii) Effective operations, i.e., confidence in operating the work process.

Under the training programme of Small Industries Development Organization, there are a number of courses covering managerial and technical fields which will stand the entrepreneurs in good stead. Some of these are:

- (1) Entrepreneurship Training Courses.
- (2) Managerial Training Courses.
- (3) Training Course for Artisans—skilled and unskilled.
- (4) Specialist course for Bank Executives, Planners etc.
- (5) Training Courses for Senior Executives of Developing Countries.

The Syllabus covers facilities and support offered by different organizations, scope and prospects of different types of industries, preparation of feasibility reports and schemes and management of small scale industries.

The main emphasis and the target for training are in addition to the above courses. The Corporation organises technical training courses in shop practice, trade orientation, process orientation, blue print reading. The other institutes which organise such courses are:

- (1) Central Footwear Training Centre, Madras and Agra
- (2) Extension Centre, Solan.
- (3) Small Industries Extension Training Institute, Hyderabad.
- (4) National Institute for Training in Industrial Engineering, Pune, Bombay.
- (5) Indian Institute of Management, Ahmadabad, Calcutta, Bangalore.
- (6) Management Training Courses by National Productivity Council.

5. Assistance in Marketing

The success of small scale industries enterprise depends almost solely upon the ability and efficiency to market its products. On their own, the entrepreneurs cannot be able to sell their products, hence they need some help from the Government. Knowing this, the Government have also recognised the need and offered assistance to them. Marketing assistance is essential for the development of the small-scale industries.

The biggest department of Government which has been entrusted with the marketing assistance to be offered to the entrepreneurs is Directorate General of Supply and Disposal. It undertakes purchases for government offices. All those entrepreneurs who desire that Government should find the market for their products have to register with the DGS & D by paying the prescribed fee. Such registration is initially valid for one year which is renewed thereafter for three years. They can also register with National Small Industries Corporation.

Apart from the DGS & D, there are other departments which have to purchase their goods from the small industries compulsorily. These are: Indian Railways, Post and Telegraph Department, Defence Organisations, Canteen stores, State Governments, State Small Industries Corporation, State Emporia, Departmental Stores, Trade Centres, Showrooms, District Industries Centres, Rural Marketing and Service Centres.

To provide encouragement and boosting to the self-employed entrepreneurs, the Government have reserved certain items for exclusive purchases from the small-scale industries. The step has been taken to provide supportive protection against possible opposition and stiff competition from the big industries. It is but natural that the small entrepreneurs cannot stand in quality and price of the production manufactured by big industrialists. In fact, the big industrialists are not allowed to manufacture certain items so that the small industries are not faced with the competition. These small industrialists are also relieved of their anxiety of selling their products since whatever they produce is sure to be sold. That is why the Government have reserved certain items to manufacturing them to the small industries and some of these products have also been reserved for exclusive purchase by the Government. The entrepreneurs should scrutinise these items and decide one of them for their small-scale industries.

6 Export Assistance

The world is shrinking and interdependence now has become a watch word. Some countries get things from other countries and send their own to them. This is called import-export in the commercial language. From the beginning, India had a good foreign market for her goods but because of the dark ages of foreign rule, there was a break in it. The Government has been following policy of export promotion and there is today a growing market for Indian finished goods. This is good for the health of the small industries and this situation has to be exploited fully by them to their advantage. Indian goods for foreign market are less affected by the depreciation in the local market. Products which have no demand or less demand in the local and domestic market may find a good many customer in foreign market through export. Sometimes the domestic market is allowed to starve of the goods to fetch valuable foreign exchange which is utilised for the purpose of the things that we do not produce.

Small-scale industries produce a variety of sophisticated goods, ancillary parts, components, fish products, cashew products, leather and hosiery products, liquid oils, essential oils, non-gold jewellery, sports goods, rayon and synthetic goods, engineering goods, readymade garments, woollen knitweares, processed foods and many others. The earnings through these goods have made a sizeable contribution to the economy of our country.

7. Agencies Assisting Exports

Ministry of Commerce, Director of Exhibitions, Directorate of Commercial Intelligence, Export Promotion Council etc., are the agencies. All these bodies examine various things about the products like price, quality, packaging, marketing, transport etc. They arrange for market surveys, publication of reports, developing trade contacts, setting trade disputes, assisting quality control, participation in fairs, exhibitions, sponsoring foreign tours etc. Commodity Board undertakes promotional activities, provides intensive assistance, participates in fairs and exhibitions etc. Development Councils are set up for the export of leather goods, electrical goods, pharmaceutical, inorganic, chemical, non-ferrous metals, art silk, etc.

Trade representatives of India are sent to foreign countries to conduct market surveys, provide information about particular export controls etc., for the benefit of exporters from India.

Procuring foreign market by the governmental agencies or by the individual small-scale entrepreneurs involves lot of money. The Government of India came forward and offered certain concessions to obviate their losses. Such concessions are duty exemption, relaxation in central excise, exemption from sales tax, exemption from income-tax, etc. These certainly boost the morale of the entrepreneurs who prepare themselves to suffer the losses on foreign trade but because of exemptions they get them recovered. Hence, the small-scale industries entrepreneurs should take the benefit of the government's well-intended gestures to increase the export of the Indian goods to strengthen the nation's economy.

8. Small-scale Industries in Rural and Backward Areas

The process of rural uplift started from 1961 with a massive programme of rural industrialization to remove the rampant poverty in rural areas. 247 districts have already been declared backward out of which 101 are specially backward areas for additional benefits. Various measures that have been designed to bring them above the poverty line through industrialization of the rural areas include numerous concessions, subsidies, loans at concessional rate of interest, research and testing facilities, prototype facilities, besides marketing assistance and financial incentives.

FINANCIAL ASSISTANCE TO SMALL INDUSTRIES

The education system that we have is at best capable of producing young men and women who are good enough for white collar job. Its lack of emphasis on dignity of labour and absence of its correlation with the felt needs of the community or of the economy of the country, tends to inculcate among the educated a tendency to seek wage paid jobs. Any ambition of a self-employment venture withers away soon due to lack of training of any kind and poverty or resourcelessness of the individual. Over the years, the Government has started various schemes to obviate stumbling blocks in the way of entrepreneurship through a policy of training, financial help and assistance, in marketing, credit facilities made available on easy terms are a major incentives not only for small industries but even the big ones.

The Government offers credit facilities to the entrepreneurs to meet their varied requirements. It may be for the purpose of setting up a new industry, expansion of the existing unit or renovating it or enhancing its fixed and working capital. A number of agencies have been set up for this purpose:

(1) Loans Advanced by State Governments

These are as follows:

- (a) Rs. 1,000/- on personal bond.
- (b) Rs. 5,000/- on personal sureties.
- (c) Rs. 5,000- and more—Mortgage 75% of land, building, machinery, equipment, stocks and other assets.

The rate of interest is considerably low, *i.e.*, 3% to 5%. For cooperative units it is still less. Repayment of the loan is on easy instalments and the repayment period is 10 years. The powers to grant loans are vested with the District Industries Centres.

(2) State Financial Corporations

The State Financial Corporations have been set up under the Act of 1951 to advance medium and long term loans.

For private limited companies and cooperatives the limit of financial assistance is Rs. 30 lakh. For others, it is Rs. 15 lakh. The period of recovery is 10 years.

The rate of interest is 10.25% to 15% per year. The concessional rate for small scale industries in the backward area varies between 1% to 5%.

While sanctioning the loan, the Corporation scrutinises the capital structure, cost of production, margin of profit, technical competence, managerial ability, economic validity etc.

(3) State Bank of India

The State Bank of India and other nationalised banks are greatly involved in self-employment programmes. They advance loans to individuals, proprietary or partnership firms, Joint Hindu family concerns, industrial cooperative societies, limited liability companies, private or public registered associations, artisans, craftsmen and weaker sections throughout the length and breadth of the country.

The bank gives lock and key advances which means that the raw material which is not required immediately is kept under the bank's lock against which advances obtained. This is also called pledge advance.

Another type of advance offered is called factory and mandi type advance which is also a part of pledge advance which means the godowns are not kept under the lock of the bank but the bank's signboard is there.

Sometimes finished goods are taken as security and the loan is advanced—stock-in-process materials for conversion into finished goods constitute the security.

Other types of loans advanced are against trade bills, supply bills, movable property, term loans and instalment credit, medium term loans etc.

There are various schemes for financing qualified entrepreneurs desirous of setting up a small scale industry. It aims at tapping their potential and talent to provide them self-employment. The eligibility criteria for such help are worthwhile projects, good character and integrity, requisite know-how and ability.

While granting loans, the banks stress the kind of industries which are defence-oriented, save valuable foreign exchange, are export-oriented, produce essential consumer goods, help agricultural development, further industrialization, technical feasibility and help the country to attain economic viability.

The extent of loan is Rs. 2 lakh for an individual and in case of a group of individuals, it is Rs. 3 lakh without margin contribution. Assistance is provided to traders, business enterprises, professionals like doctors, transport operators etc.

(4) Small Industries Development Corporation

This Corporation formulates policies and programmes for the developmental of small industries of the national level, coordinates and maintains them. The Corporation works through its 25 Small Industries Service Institutes, 20 branch institutes, 41 extension centres, 4 regional centres, two training centres and 5 production centres. National Small Industries Corporation makes

available machines and equipments on hire-purchase basis, assists units to purchase from Government stores, and offers training in prototype and development.

A person desirous of starting an industry has to register himself with District Industries Centre or Directorate of Industries so that he becomes eligible to get the loans, concessions and facilities.

The Corporation publishes industrial statements, regional survey reports, project profiles, work study reports in which information is given on possible industries, their scope and the marketability of the products.

The Corporation helps entrepreneurs in the development of technical processes, experimentation on advance machinery and equipments, layout and designs of machine through consultancy services. It also trains people in technical management, marketing, production, finance, labour laws or offers consultancy services through specially designed training programmes, symposia, workshops or discussions. The following special institutes offer technical consultancy services: (1) Central Institute of Tool Design, Hyderabad; (2) Institute for Design of Electrical Measuring Instruments; Bombay, (3) Prototype Development and Training Centre, Delhi, Madras, Rajkot, Howrah, (4) Production and Process Development Centre for Glass and Ceramics, Ranchi; (5) Hand Tool Institute, Jalandhar; (6) Central Tool Room, Ludhiana and Calcutta; (7) Small Industries Extension Training Institute, Hyderabad.

There are 247 backward districts. It gives a number of facilities like loans at low interest, subsidies, low consultancy rate, low security rate, etc.

In other areas, the Corporation assists in modernization of the industry, provides multi-level assistance to the young engineers and entrepreneurs on hire-purchases, export promotion, financial assistance etc.

Through District Industries Centres, the entrepreneurs get information on consumer research, loans, marketing, raw materials, machinery and equipment, extension, training etc., in fact, anything they need to know about their project.

CHAPTER 27

CAREERS FOR WOMEN

The role of women in the development of society should be beyond question since they cast a mould of well-behaved citizens right from infancy of nation's children. Her contribution to a society and nation is more of enlightenment as she gives birth to valient soldiers to defend country; leaders to manage affairs of a nation; executives, teachers, professors, technicians, engineers, doctors and all such kinds of specialists are her invaluable gifts. To cap it all, she also gives birth to future mothers. In a way she is superior to males in many aspects.

However, she has not been allowed to play a role that she is capable of since time immorial. It is quite evident now that given opportunities, she can play an important role in so far as her contribution is concerned, no matter what field she wants to make a mark in. There may be a difference, obviously not of kind, but only of degree between the women of western society and that of eastern one. Western Society is more liberal, but ironically women in the east earned their freedom earlier, for example, voting rights. However, we should not be deceived by comparisons.

Earlier to the traditions set in women were held just equal to men. Brahma, Vishnu and Mahesh had their equal counterparts in Saraswati, Laxmi and Durga. Such being the case, how come it that women, at least in India, lost their grace in the following centuries. She began to receive treatment with prejudice, her role was confined to three 'K's i.e., kids, kitchen and knitting.

The spread of Education and the concerted efforts of emancipators of women like Raja Ram Mohan Roy, Vithal Ramji Shinde, Mahatma Phule and Dr. D.K. Karve had created an awareness among women, the result of which is that they are now being held in high esteem. There are gradual changes in their attitude and behaviour. But the parody is that women are degrading themselves. This epigramatic statement may appear to be quixotic engineered by males but the proof is so strong that one has to accept it. Pregnant woman's wish to bear a male child, barren couple's desire to adopt a male child, a couple having only daughters desires to be blessed with a son, mother's discreminatory treatment to her own son and daughter in matters of education, clothing, food, etiquette and manners, celebration of birthdays

and demand of dowry, all in combination support that treatment. She has to realise herself and come out of this murky situation. One expected that those women who were on frying pan could have fought a mountainous problem tooth and nail and could have set an ideal for males. Instead, they are involved in sinister acts of degrading themselves.

Though historical knowledge is beyond challenge, yet if the truth is assessed on the basis of empirical knowledge of the current facts, we have to set aside the historical myth that women are not capable of becoming equal of males. The sweep and pace of their progress has unquestionably established that contribution of women in almost all fields including those that were taken to be men's exclusive preserve has amply proved that women are not less effective than males, where the Nature intervenes, we have to be lenient to keep a marginal allowance, but the Nature's such intervention equally applies to men also. Hence, the balance is equated.

Women are breaking the shackles of traditionalism and are proving to be an asset to the developmental process occupations being no exceptions. Women are conquering citadels of men which is a sign of their mental and physical strength. They are found equally competent in offices, industries, hospitals and such institutions and such other places where employment of manpower is there. An effort has been made to mention occupations most suited to women in the following lines.

(1) Professional, Technical and Related Careers. Women are quite suitable for teaching careers specially where care and warmth of love for infants and children are needed. Teaching is a large field where women can find many more employment opportunities in various grades as Pre-primary School Teachers, Montessary Teachers, Nursery Teachers, Kindergarten Teachers, Primary School Teachers, Higher Secondary School Teachers, Subject Specialists—Language Teachers, Art Teachers, Drawing Teachers, Craft Teachers, Handcraft Teachers, Physical Training Instructors, Home Science Teacher, Women Social Education Organizer, Career Master, School Teacher, Counsellor, the special teachers for teaching deaf and dumb, mentally retarded, blind people. In colleges and universities they can be employed as demonstrators, lecturers, readers, professors etc. (For details refer to 'Careers in Teaching' in this book).

Medical and Health Occupations. Lady physicians and surgeons, Nurses, Lady Health Visitors, Medical Laboratory Technicians, Pharmasist, Radiologist, Chemist, Supervisor, Research Assistant, Analytical Assistant, Dispenser, Compounder, Physiotherapist, Occupational Therapist, Dietician, Nutritionist, Dental Assistant, Dental Hygienist, Vaccinator, Inoculator, Midwife, Auxiliary Nurse, Dai, Masseuse etc.

Art and Crafts. Musician, painter, sculptor, film actress, dancer, dramatist, stage artist, commercial photographer, window

dresser, textile designer, interior decorator, dresser, news reader, programme comperer, copy writer, illustrator, cartoonist, designer, media executives, correspondents, columnist, sub-editor, editor, instructor, etc.

Social education organizer, child welfare organizer, mukhya sevika, instructor, field work supervisor, superintendent, probation officer, medico-psychiatric, social worker, administrator, research officer, social welfare worker, health visitor etc.

Engineer, architect, technologist, draughtsman, engineering technician, laboratory assistant, lawyer, advocate, physical scientist, mathematician, statistician, investigator, statistical assistant, computer programmer, economist, psychologist, historian, archaeologist, librarian, archivist, philologist, translator, interpreter, manpower specialist, vocational guidance officer.

(2) Administrative, Executive and Managerial Occupations. Professional managers, personnel executive, personnel officer, State and Central Government administrative officers, bal sevika, Grihasevika.

(3) Clerical and Related Occupations. Clerk, stenotypist, stenographer, private secretary, receptionist, key punch operator, card sorting machine operator, calculating machine operator, verifier, computer, coding machine operator, computer programmer, book keeper, junior accountant, accounts clerk, cashier, auditor, accounts executive, accountant, etc.

(4) Transport and Communication Occupations. Telephone operator, monitor, supervisor.

(5) Sales Occupations. Sales girl, sales assistant, counter girl, demonstrator, propagandist, canvasser, representative, outdoor sales girl, distributor, order supplier, market surveyor, buyer, agent, supervisor, purchase officer, insurance agent, field officer, fashion model etc.

(6) Service Occupations. House keeper, matron, tutor, governess, air hostess, stewardess, building caretaker, hair dresser, hair stylist, beautician, manicurist, make-up girl, tourist guide, police constable and other ranks in protective forces.

In all the occupations courageous women who can discard the beaten tract of household duties should have to come forward and pursue technical and professional education as a precursor to entry into different occupations. No doubt, there are difficulties for women to take up jobs in the fields of construction, mining and heavy mill machine workshops, transport and foundries. Yet, there are fields wherein they are suited by virtue of their physique, temperament, endowment for creative arts, adaptability, flexibility, human sympathy etc. It is not easy to make a departure from the beaten path for which purpose daring is needed.

However, in the already shrinking wage paid employment, it is rather difficult to get employment for all women. Wage-paid employment alone cannot provide employment opportunities for creative potential of women because they are very few. Women will have to find out jobs of their own, i.e., self-employment.

The field of self-employment surely cannot become a scare-crow for women to enter into. Nothing is impossible for women. The only thing that is prominently needed is to create awareness among them so that they will know their worth. Individual attempts are necessary.

The magical name of "Self-Employed Women's Association" is worth mentioning in this connection. This is an organization which is founded, run and managed by women only and has indeed been doing a marvellous job in imbuing importance of self-employment among women. This organization selects women irrespective of their standing and position to help them choose business of their liking and assists them in providing necessary guidance. At present, this association, which has its base in Delhi, is in its infancy but has shown stupendous potential to become a pioneering institution for spreading the cult of self-employment of women. No doubt, there is another organization of the same name in India, but its activities are confined to create wage-paid employment than the self-employment opportunities. It is just a beginning of its activities and sooner it will grow into a big and prosperous organization on which many women would pin their hopes of being self-employed through its help.

(7) *Domestic Industries*. They can set up their own small workshops in the following items:

- (a) *Tailoring Shop*. It will involve designing and tailoring women's and children's ready-made garments, costumes, uniforms, etc. There is a great scope for export of ready-made garments.
- (b) *Textile Printing*. Printing of fabrics, sarees, neckties, scarves, etc.
- (c) *Knitting*. Knitting done by hand or on machine of sweaters, pullovers, cardigans, etc.
- (d) *Embroidery*. Hand and machine embroidery of women's, children's clothes, sarees made of cotton, woollen or silk.
- (e) *Textile Designing*. Designing of new patterns for textile and garments.
- (f) *Kitchenware*. Designing and manufacturing of kitchenware, gadgets and utility items.

- (g) *Florist Shop*. Selling of flowers and floral accessories for household use, marriages, parties, women's hair, etc.
- (h) *Furnishing Shops*. Designing and manufacture of furnishings, furniture pieces, etc.
- (i) *Pickles*. Processing, packing or production of fruits, vegetables, squashes, jellies, pickles, sauces, jams, etc.
- (j) *Masalas*. Processing, grinding, pounding and packing of masalas for cooking of meat, gram, dal, etc.
- (k) *Cosmetics*. Manufacture of nail polish, shampoos, hair oil, soap, etc.
- (l) *Jewellery*. Making and designing of varied kinds of jewellery.
- (m) *Chemicals and Detergents*. Manufacture of soaps, washing powders, cleansing powders, phenyle, inks, etc.
- (n) *Dairy Farming*. Raising and care of cattle, selling of milk and milk products like butter, cream, ghee, chakka, sweet-meats, etc.
- (o) *Poultry*. Rearing of fowls for eggs and selling them as human food.
- (p) *Other items*. Chalk sticks, paper envelopes, sealing wax, candles, paper or plastic flowers, dolls and toys, shopping bags, plastic goods, etc.

There is a scope for freelance activities by professionally trained women. They are reporter, correspondent, representative, author, script writer, translator, interpreter, language specialist, painter, commercial artist, window dresser, fine artist, sculptor, cartoonist, modeller, interior decorator, furniture designer, renovator, copy writer, textile printer, textile designer, garment designer, hair dresser, beautician, masseuse, photographer, camera operator, music teacher, dance teacher, musician, dancer, music composer, singer, tourist guide. Such work can be procured on piecemeal basis or on part-time basis and done in extra hours. Such services can also be extended on consultation basis in the following capacities.

Advertising agent, architect, nutritionist, dietician, catering, food technologist, physician, physiotherapist, speech therapist, occupational therapist, nurse, midwife, health visitor, optician, dentist, orthodontist, translator, decorator, beautician, textile/fabric designer, commercial artist, fine artist, pharmacist, lawyer, veterinary surgeon, etc.

For wage-paid employment the details about educational qualifications required for joining professional courses, qualifications — professional and technical for entry into the employment, age and other conditions are just similar to male candidates. There is no change at all. The same case is with self-employment opportunities

for which training, financial assistance, market facilities and other conditions are similar. However, women who are divorcees or separated are given age concession for entry into educational institutions as well as in employment upto the age of 35 years. They will have to produce a certificate to this effect from a competent authority as a proof of being a widow or separated.

For working single women Government have started working women's hostels where they can live by paying prescribed rentals and boarding charges. These hostels are in big cities only.

All the information that has been given here should be used only for guidance purposes and detailed information can be collected from original sources or paying a visit to the institution.

CHAPTER 28

ADMISSIONS IN THE ENGINEERING COLLEGES

Every year there is a time to seek admission in engineering colleges. Many students do not know much about the details of admission in these colleges. For their knowledge and help such details are given in two parts. The first part gives information about admission in Engineering Colleges/Institutes at State level. The second part which appears next will give information about admission in Engineering Colleges at All-India level.

Every care has been taken to give minimum but authentic information. However, candidates are advised to seek information from the original sources.

ADMISSIONS TO ENGINEERING COLLEGES

With the stress on science and technology, there is a spurt in the number of Engineering Colleges, new fields of technology and seats created in them. However, admission to different degree courses in various Engineering Colleges and Institutes is not simple as the number of aspirants of admission to these colleges is much more and moreover admissions are restrictive to the residents of a particular State. There are colleges in which admission is given on domicile basis and in some others on All-India basis. First of all we will consider admission in Engineering Colleges on domicile basis.

Admissions in the Colleges at State Level. Each state has a number of colleges. Admission to these colleges is based on a common entrance examination or number of marks secured in the qualifying examination in Physics, Chemistry and Mathematics. The qualifying examination is 12th Standard/Intermediate with science stream. In some colleges there is no age-limit and in others it varies from 17 to 22 years. Except few seats, all seats are for the bonafide residents of that state only. Provision for admission of children of ex-servicemen, outstanding sportsmen, children of freedom fighters, handicapped and service personnel is there. Usual reservation for SC/ST candidates is also there.

Apart from the provision of admission to different categories of applicants there are certain seats allocated for candidates nominated by the Government of India.

The information given in these parts is just to acquaint candidates with the admission procedure in the Engineering Colleges. Every college has its own characteristics and hence, it is imperative

on the part of aspirants of engineering education to get further information from the respective colleges or consult a booklet No. 47 titled "ADMISSIONS TO ENGINEERING (1st Degree Courses)" published by Career Study Centre of the Central Institute for Research and Training in Employment Service, New Delhi. This is available for reference purposes with University Employment Information and Guidance Bureau established in some of the Universities. These bureaux will also supply relevant information about the admission into various Engineering Colleges/Institutes in details. The above mentioned booklet can be had from the nearest local Employment Exchange or from Controller of Publications, Old Secretariat, Civil Lines, Delhi-110054.

So varied is the information that it is not possible to state in absolute terms. For example, Higher Secondary, 10+2, Pre-Engineering, Pre-Degree, Intermediate, Pre-University, Inter Science, etc., though treated as equivalent yet in some colleges they have different connotations. Hence tapping of original source is necessary, Residential condition is another factor which has got different interpretations in the States.

Though minimum percentages have been prescribed in the qualifying examinations it is hardly possible for candidates to get sure admission on this basis looking to the limited number of seats available in the colleges/institutes. It is, therefore, explicit that higher the number of marks, greater is the possibility of getting admissions in these colleges. Students studying in the final year of the Higher Secondary stage should have to bear in mind that they have to work hard to secure maximum number of marks to facilitate 'Smooth' entry in the Engineering Colleges. That will be the only asset for them.

Apart from the qualifying examination as the mode of entrance into the Engineering Colleges candidates can enter them on the strength of merit in the Entrance Examination conducted by the Engineering Colleges, sometimes a joint entrance examination conducted by some Board or Authority or by the individual college or institute.

This is an opportunity for those candidates who were not able to secure more number of marks in the qualifying examination for one reason or the other. They can work for these entrance examinations with renewed vigour and enthusiasm. For preparation for these examinations, there are certain books available in the market which may be purchased by the interested candidates.

With apology, finally I want to say that information in both the parts is not extensive so far as the coverage of the colleges is concerned. There may be some colleges/institutes left out. Further information can be had from the sources quoted above.

I. Admission to Regular Engineering Colleges—State-wise

Sl. No.	State	Location of Colleges	Courses Taught with Duration	Qualification	Domicile	Mode
1	2	3	4	5	6	7
1.	Andhra Pradesh	Anantpur, Kakinada, Hyderabad, Waltair, Kothagudam.	B.E. (4 Years) B. Tech. (4 Years) B. Arch. (5 Years)	Intermediate Examination of A.P. with PCM.	10 years stay in the State.	Merit in Common Entrance Exam.
2.	Assam	Jorhat, Guwahati.	B.E. (4 Years)	Pre-University of Guwahati and Dibrugarh Universities in PCM with 45%.	State Universities Area.	Merit in Entrance Examination.
3.	Bihar	Bhagalpur, Muzaffarpur, Sindri, Patna.	B.Sc. (4 Years) B. Tech. (4½ Years)	Intermediate in PCM with 45%.	Residents of Bihar only.	-do-
4.	Chandigarh	Chandigarh.	B. Arch. (5 Years)	Higher Secondary with 55% in PCME.		Qualifying Examination.
5.	Gujarat	Ahmedabad, Morvi, Nadiad.	B.E. (4 Years)	Higher Secondary in Science with 55%.	Residents of Gujarat only.	Qualifying Examination and Interview.
6.	Karnataka	Bangalore, Dawangere.	B.E., B. Arch.	Pre-University in PCM and English with 50%.	Residents of Karnataka only.	-do-

(There are a number of colleges where admission is given on payment of capitation fee irrespective of %. Other conditions remain the same. Management quota seats are open to all. These colleges are at Bangalore, Gulbarga, Hubli, Ramanagaram, Tumkur, Bidar, Raichur, Bhatghar, Bagalkot, Belgaum, Halkoti, Kenchennur, Dharwar, Mysore, Manipal, Chikmagalur, Davangere, Chitradurga, Shimoga, Hassan, Mandya.)

7. Kerala	Trichur, Palghat, Trivandrum, Kothamangalam, Quilon.	B.Sc. (4 Years) B. Arch. (4 Years)	Pre. Degree with 50% in Maths. and 50% in PCM.	Residents of Kerala only.	Qualifying Examination.
8. Madhya Pradesh	Rewa, Vidisha, Indore, Jabalpur, Gwalior, Raipur, Bilaspur, Ujjain.	B.E. (5 Years)	Higher Secondary in PCM.	Residents of M.P. only.	Entrance Examination.
9. Maharashtra	Bombay, Aurangabad, Amaravati, Pune, Karad, Sangli.	B.E. (4 Years)	Higher Secondary with 50% in PCM.	Residents of Maharashtra only.	Qualifying Exam.
10. Orissa	Sambalpur, Bhubaneswar.	B.Sc. (4 Years)	Inter Science in PCM.	Residents of Orissa only.	Entrance Examination.

1	2	3	4	5	6	7
11.	Punjab	Ludhiana	B.Sc. (4 Years)	Pre-Engineering in PCM and Engineering with 50%.	Residents of Punjab and Chandigarh.	Qualifying Examination.
12.	Rajasthan	Jodhpur, Udaipur.	B.E. (5 Years)	Higher Secondary in PMC in Second Division.	Residents of Rajasthan only.	Qualifying Examination.
13.	Tamil Nadu	Coimbatore, Salem, Karaikudi, Madurai, Annamalai Agartala	B.E. (4 Years) B. Tech. (4 Years)	Higher Secondary in PCM with 60 %.	Residents of Tamil Nadu.	Qualifying Examination.
14.	Tripura		B.E. (4 Years)	Higher Secondary in PCM with 50%.	Residents of Tripura only.	Qualifying Examination.
15.	Uttar Pradesh	Sultanpur, Agra, Gorakhpur, Pantnagar, Kanpur, Aligarh, Allahabad, Varanasi, Roorkee.	B. Tech. (4 Years) B.Sc. (4 Years) B.L. (4 Years)	Intermediate in PMC.	Residents of U.P. and 10% seats for other States.	Entrance Examination and Interview.
16.	West Bengal	Howrah, Calcutta, Behrampur, Serampur, Jalpaiguri	B.E. (4 Years) B.Sc. (4 Years) B.Arch. (4 Years)	Higher Secondary in PCM and English and Vernacular.	Residents of W.B. only.	Entrance Examination and Viva-Voce.

II Admissions to Engineering Colleges/Institutes on All India Basis (Without Residential Condition)

A ENGINEERING COLLEGES IN DIFFERENT STATES

<i>Name of Engineering College/Institute</i>	<i>Course Taught with Duration</i>	<i>Educational Qualifications</i>	<i>Branches</i>	<i>Mode of Entry</i>	<i>Remarks</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1. S.V. College of Engineering Tirupati, Andhra Pradesh.	B.Tech (4 Years)	Inter Science or equivalent with PCM in one attempt with 55%.	Chemical, Civil, Electrical, Electronics & Communication, Mechanical.	Entrance Test and Qualifying Examination.	15% seats for outside candidates.
2. Birla Institute of Technology, Mesra, Ranchi Bihar.	B.Sc. (4 Years)	Inter Science with PCM or equivalent.	Civil, Electrical, Electronics and Communication, Engineering, Mechanical.	Entrance Test and Interview.	50% seats open.
3. Indian School of Mines, Dhanbad, Bihar.	B.Tech. (4 Years)	10+2 in PCM Engineering or equivalent.	Mining, Mining Machinery, Petroleum Engineering.	Entrance Test in Engg., General knowledge and PCM.	One seat each for Assam and Gujarat in Petroleum Engg. and Government of India nominees.

1	2	3	4	5	6	7
4.	Delhi College of Engineering, Delhi.	B.E. (4 Years)	10+2 in PCM with 60% and Pass in English.	Civil, Electrical, Mechanical.	Qualifying Examination.	20% seats open.
5.	College of Engineering, Farmagudi, Goa.	B.E. (4 Years)	10+2 with Science with 45% in PCM Engineering and Modern Indian/Foreign language.	Civil, Electrical, Mechanical.	Qualifying Examination, Weightage to B.Sc. (II) in PCM.	18% seats open.
6.	Department of Technology and Engineering, Baroda, Gujarat.	B.E. (4 Years) B.Tech. (4 Years) B.Arch. (5 Years)	10+2 or equivalent Science Subjects.	Chemical, Electronics, Civil, Electrical, Metallurgy, Mechanical, Textile Engg., Textile Technology, Architecture.	Entrance Test in PCM Engg. and General Knowledge.	25% seats open.
7.	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar, Gujarat.	B.E. (4 Years)	12th in PCMB with 60%.	Civil, Electrical, Mechanical.	Entrance Test and Interview.	10% seats are open.

8. The Technological Institute of Textile, P.O. Birla Colony, Bhivani, Haryana.	B.Tech. (4 Years)	Pre-Engineering with Engineering and PCM.	Textile Technology, Textile Chemistry.	Entrance Test and Interview.	Some seats are open.
9. Indian Institute of Science, Bangalore, Karnataka.	B.E. (3 Years)	B.Sc. (PCM in second class).	Electrical, Technology and Electronics and Communication, Metallurgy.	Entrance Test	Open to all.
10. Faculty of Technology, Cochin, Kerala.	B. Tech. (4 Years) for Naval Arch., B. Tech (3 Years) for Rubber Technology.	Naval Arch.—Pre-Degree in PCM with 60% Rubber Tech.—B.Sc., with 55%.	Naval Architecture and Ship Building, Polymer Science and Rubber Technology.	Naval Architecture—Entrance Exm., Rubber Tech.—Qualifying Examination.	Open to all.
11. Sir J.J. College of Architecture, Bombay, Maharashtra.	B. Tech. (5 Years and 4 Years)	5 Years—High Secondary with 55% 4 Years—Inter Science with 55%.	Architecture.	Merit, Aptitude Test and Interview.	50% seats open.
12. National Fire Service College, Nagpur, Maharashtra.	B.E. (3½ Years)	B.Sc. with PCM.	Fire Engineering	Qualifying Examination.	Open to all, seats for service employees.

1	2	3	4	5	6	7
13.	Faculty of Engineering and Technology, Annamalaiagar, Tamil Nadu.	B.E (4 Years)	Inter Science in PCM with 60%	Civil, Mechanical, Electrical, Electronics, Civil and Structural, Mechanical and Production, Electronics and Instrumentation, Chemical.	Qualifying Exam. and Interview.	32% seats open.
14.	A.C. College of Technology, Madras, Tamil Nadu.	B. Tech. (4 Years)	10+2 in PCM with 60%.	Chemical Engineering, Leather Technology, Textile Technology.	Qualifying Examination and Interview.	32% seats open.
15.	College of Engineering, Madras, Tamil Nadu.	B.E. (4 Years)	Pre-Degree with 60% Maths., 60% in PCM and 70% aggregate.	Civil, Electrical, Electronics, Electronics and Communication, Mechanical Production.	-do-	-do-
16.	Madras Institute of Technology, Madras, Tamil Nadu.	B. Tech. (3 Years)	B.Sc. (PCM with 60%)	Aeronautical, Automobile, Electronics, Instrument Technology, Production Technology	-do-	-do-

17. School of Architectural Planning, Madras, Tamil Nadu.	B. Arch. (5 Years)	Pre-University with 70% in Maths., 70% P and C, 80% Aggregate.	Architecture.	-do-	-do-
18. Harcourt Butler Technological Institute, Kanpur, Uttar Pradesh.	B. Tech. (4 Years)	Intermediate in PCM with Second Class.	Chemical, Civil, Electrical, Mechanical, Leather Technology, Bio-chemical Technology, Food Technology, Oil Technology, Paints Technology, Plastic Technology.	Entrance Test	seats for Assam —4 H.P. —3 Manipur—3 Orissa —6

In some of these colleges certain seats are reserved for children of Disabled Ex-Servicemen, Outstanding Sportsmen, Handicapped, Children of Freedom Fighters, Children of Service Personnel of the Armed Forces and nominees of Central Government. Usual reservation for SC/ST is also available.

B. REGIONAL ENGINEERING COLLEGES

There are 15 Regional Engineering Colleges. Candidates have to apply to the College assigned to the State/UT in which the School or College from which they have passed the qualifying examination is located. 50% seats are allotted to candidates outside the jurisdiction of a particular college.

Sl. No.	Name of the College	Area	Courses	Branches	Qualifications	Mode	Remarks
1	2	3	4	5	6	7	8
1.	Regional Engineering College, Warangal, Andhra Pradesh.	Andhra Pradesh.	B. Tech. (4 Years)	Civil, Mechanical, Electrical, Chemical, Electronics and Communication, Meteorology.	Intermediate PCM with 50%.	Qualifying Exam.	25% Govt. Nominees 5% DXS
2.	Regional Engineering College, Silchar, Assam.	Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim.	B.E. (4 Years)	Civil, Electrical, Mechanical.	12th with 50% in PCM	-do-	Govt. of India Nominees. 6 seats.
3.	Regional Engineering Technology, Jamshedpur.	Bihar	B.Sc. (Engg.) (4 Years)	Civil, Electrical, Mechanical, Metallurgy.	-do-	-do-	-do-

4.	S.V. Regional College of Engineering and Technology, Surat	Gujarat	B.E (4 Years)	Civil, Electrical, Mechanical.	12th with 55% in Science Subject	-do-	Govt. of India Nominees 18 seats.
5	Regional Engineer- ing College, Kurukshetra	Haryana, Chandi- garh, Delhi, (5 Years) Punjab	B.Sc (Engineering)	Civil, Electrical, Electronics and Communication, Mechanical	12th with 50% in PCM	-do-	—
6	Regional Engineer- ing College, Srinagar	J K and H P	B.T (4 Years)	Chemical, Civil, Electrical, Mechanical, Metallurgy.	-do-	-do-	—
7.	Karnataka Regional Engineering College, Surathkal	Karnataka	B.T (4 Years)	Chemical, Electronics and Communication, Civil, Metallurgy, Electrical, Mechanical.	-do-	-do-	Govt. of India Nominees 21 seats.
8.	Calicut Regional Engineering College, Calicut.	Kerala Lakshad- weep Islands	B.Sc Engg (4 Years)	Chemical, Electronics and Communication, Civil, Metallurgy, Electrical, Mechanical.	-do-	-do-	Govt. of India Nominees 15 seats.

1	2	3	4	5	6	7	8
9.	Maulana Azad Medical College and Technology, Bhopal.	M.P.	B.E. (4 Years) B. Arch. (5 Years)	Civil, Mechanical, Electrical, Electronics, Architecture.	Higher Secondary (11th Year) Technical or stream wit' 55%.	-do-	—
10.	Vishvesveraya Regional Engineering College, Nagpur.	Maharashtra, Goa, Daman and Diu, Dadra, Nagar Haveli.	B.E. (4 Years)	Civil, Electrical, Mechanical, Metallurgy.	12th with PCM with 50%.	-do-	—
11.	Regional Engineering College, Rourkela.	Orissa	B.Sc. (Engineering) (4 Years)	Chemical, Metallurgical, Civil, Electrical, Mechanical, Mining.	12th in PCM with 55%.	-do-	Govt. of India Nominees 16 seats.
12.	Malaviya Regional Engineering College, Jaipur.	Rajasthan	B.E. (5 Years)	Civil, Mechanical, Electrical, Metallurgy.	Pre-University in PCM with 60%.	-do-	Govt. of India Nominees 16 seats.

13.	Regional Engineering College, Tiruchirapalli.	T.N., Pondy., Mahe, Yanam.	B.E. (4 Years) B.Tech. (4 Years) B.Arch. (5 Years)	Civil, Electrical, Electronics and Communication, Industrial Engineering, Production Engineering, Mechanical.	Higher Secondary with 60% in PCM.	-do-	—
14	Motilal Nehru Regional Engineering College, Allahabad.	U.P	B.E. (4 Years)	Civil, Computer Science, Electrical, Mechanical.	Intermediate in PCM.	-do-	Govt. Nominees 19 seats.
15	Regional Engineering College, Durgapur.	W.B., Andaman, Nicobar Islands.	B.E. (4 Years)	Chemical, Civil, Electrical, Mechanical, Metallurgy.	12th in PCM and Engg.	-do-	Govt. Nominees 20 to 25 seats.

C. INDIAN INSTITUTES OF TECHNOLOGY

<i>Sl.No.</i>	<i>Name of the Institute</i>	<i>Courses</i>	<i>Branches</i>	<i>Qualifications</i>
1.	Indian Institute of Technology, Bombay.	B.Tech. (4 Years)	Aeronautical, Chemical, Civil, Computer Science, Electrical, Mechanical, Metallurgy.	10+2 with PCM
2.	Indian Institute of Technology, Kanpur.	-do-	As above.	-do-
3.	Indian Institute of Technology, Delhi.	-do-	Chemical, Civil, Electrical, Mechanical, Textile	-do-
4.	Indian Institute of Technology, Kharagpur	-do-	Aeronautical, Agriculture Engineering, Chemical, Civil, Computer Science and Engineering.	-do-
		B.Arch. (5 Years)	Electrical, Electronics and Electrical, Communication, Mechanical, Metallurgy, Mining/Naval Architecture.	
5.	Indian Institute of Technology, Madras.	B.Tech. (4 Years)	Aeronautical, Chemical, Civil, Electrical Power, Electronics, Mechanical, Metallurgical. Naval Architecture.	-do-

Note :—Admission to IIT's is made on the basis of merit in the joint entrance examination comprising Maths., Physics, Chemistry and English.

Engineers trained by various Engineering Colleges and Institutes work in different fields in different capacities with respective designations. The type of work they are expected to do has been described below.

I. Civil Engineers

(1) *Civil Engineer, Railways.* He plans, organises and supervises maintenance and laying of railway tracks and construction of bridges, roads, buildings, sheds, etc., for railways according to prescribed specifications.

(2) *Civil Engineer, Public Health.* He plans, organises and supervises installing of water supply plant, pipe lines and accessories and construction of drains, sewers and other sanitary works in municipal corporation, township or specified areas.

(3) *Civil Engineer, Building.* He plans, organises and supervises construction and repair of building etc., for office or residential purposes after ascertaining soil condition, availability of labour, materials etc. and decides types of structures to be built and materials to be used.

(4) *Structural Engineer.* Plans, organises and supervises construction and repair of bridges, factories, towers and other structures to meet specific requirements with assistance of engineers (civil, building, mechanical and others).

(5) *Civil Engineer, Irrigation.* He plans, organises, supervises construction and maintenance of dams, barrages, canals, tunnels etc., with assistance of Geologists and other engineers where necessary. Visits sites to collect necessary data such as course of water, topography, nearby villages, agricultural lands, availability of labour and material.

(6) *Civil Engineer, Highway and Roads.* He plans, organises and supervises construction and repairs of roads as well as culverts and bridges to connect cities, towns and important places within the town; undertakes reconnaissance and topographical surveys to gather information regarding villages, towns and cities to be connected, rivers, nullahs and railway crossings enroute, soil data, etc., to decide suitable route for road construction.

(7) Other Civil Engineers are engaged in designing, construction and maintaining docks, harbours, light houses, aerodromes, run-ways. Many times a particular type of civil engineer has to look after many activities described as duties of other civil engineers.

II. Electrical and Electronics Engineers

(1) *Design Electrical Engineer.* He plans and designs various types of electrical plants and equipments using available research data; prepares plans, diagrams and sketches of electrical plants and

equipments for manufacture, indicating construction details, material specifications and production methods.

(2) *Electrical Engineer--Generation and Supply.* Alternatively called as Power House Engineer, Mains Engineer or Maintenance Superintendent, he installs, operates and maintains power generating stations and power transmission and distribution system. He is also designated as Generation Engineer, Distribution Engineer and Operation Engineer.

(3) *Telecommunication Engineer.* He designs, manufactures, installs, operates and maintains telegraph and telephone telex systems, radio, radar, special microwave and other telecommunication instruments; surveys areas for installation of telegraph and telephone equipments.

(4) *Radio Engineer, Telecommunication.* He plans, designs, installs and maintains equipments utilised in radio broadcasting, transmission, reception and television programmes; plans layouts of transmission and receiving system equipments.

(5) *Microwave Engineer, Telecommunication.* He designs, installs, maintains and operates special telecommunication equipments working on microwave such as radar, navigational aids etc., to maintain communication between specified points.

(6) *Line Communication Engineer, Telecommunication.* Alternatively known as Telephone Engineer or Telegraph Engineer, he plans, designs, installs and maintains telegraph, telephone and other telecommunication equipments.

(7) *Sound Engineer.* He designs acoustic construction and installs, operates and maintains audio systems for transmission of voice in audio broadcasting, public address systems and for recording sound for motion pictures.

(8) Other Electrical and Electronics Engineers have respective specialised jobs as inspecting or testing systems of electrical equipments, carry out research work, rendering consultancy services etc.

III. Mechanical Engineers

(1) *Mechanical Engineer, Designs.* Also called Machine Designer, he plans and designs various types of machines, tools and equipments for manufacture or experiment; studies details and performance of existing machines.

(2) *Tool Engineer.* Alternatively designated as Tool Designer or Mechanical Engineer (Tools), he designs and supervises manufacture of tools, jigs, fixtures, gauges, cutters and other mechanical equipments and gets those already in use reconditioned for further use.

(3) *Mechanical Engineer, Production.* Also known as Production Engineer, he plans, processes and directs manufacture of

products by efficient methods at economical cost and according to time schedule; studies drawings or blue-prints to ascertain various specifications of products to be manufactured.

(4) *Mechanical Engineer, Structural.* Structural Engineer—He plans, designs and supervises construction and erection of steel structures; prepares tentative plans, sketches and diagrams of steel or metal parts to be used or elevations to be given etc.

(5) *Mechanical Engineer, Maintenance.* Maintenance Engineer—He plans repairs, undertakes overhauling of machines and equipments and maintains them in proper working order; observes working of machines and equipments to determine their capacity and maximum efficiency.

(6) *Mechanical Engineer, Automobile.* Automobile Engineer—He designs new models and plans manufacture and repairs of cars, trucks and other motor vehicles; studies performance of different types and models of automobiles and designs new models of automobiles.

(7) *Mechanical Engineer, Aeronautical.* Aircraft Maintenance Engineer—He develops and modifies designs of aircrafts, structural and misile systems and maintains their airworthiness; analyses comprehensive or incomplete engineering sketches, drawings and notes to evaluate manufacturing or functional practicability of proposed designs.

(8) *Mechanical Engineer, Marine Engineering.* He plans, designs and supervises construction and erection of all mechanical equipments on ships, boats, tugs, dredges, etc., instals and maintains motors, engines, boilers and auxiliary and carries out their periodic overhaul.

(9) *Naval Architect.* He designs and oversees construction and repair of marine crafts and floating structures; studies design proposals and specifications to establish basic characteristics of crafts such as size, weight, speed, propulsion, armament, cargo, displacement, draft, crew and passenger complements and fresh or salt water service. They are also called Marine Engineer/Designer.

(10) *Mechanical Engineer, Airconditioning/Refrigeration Engineer.* He designs, assembles, instals and maintains air-conditioning, refrigerating or ventilating plants and accessories in buildings, mills, storage rooms, mines etc. for obtaining and maintaining required degree of temperature, relative humidity and air motion or for exhaust and supply of fresh air.

(11) Other Mechanical Engineers work in certain specific fields such as research, testing of equipments, rendering technical advice or mechanical engineering problems such as installing machine foundations, erecting structural steel, transportation facilities, etc.

(IV) Chemical Engineers

(1) *Process Engineer.* He directs and supervises operations of chemical plants and equipments of chemical plants and equipments for dissolving, filtration, concentration, combination, evaporation, dehydration, reduction, crystallization and all other unit operations for manufacture of heavy chemicals, fine chemicals, etc., according to specifications.

(2) *Chemical Engineer, Designer.* He designs and plans lay-outs and supervises installation of chemical plants and equipments for manufacture of heavy and fine chemicals, paper pulps, cement, rayon, oils, soaps, coke, coke oven by-products etc.

(3) *Chemical Engineer, Paints and Varnishes.* He develops new or improved techniques for manufacturing paints and varnishes by various chemical processes, selects raw materials for manufacture of paints and varnishes and determines proportions of ingredients such as zinc oxide barytes, colour pigments, natural resins, synthetic resins and solvent, linseed oil, etc.

(4) *Chemical Engineer, Drugs and Acids.* He develops new or improved techniques for manufacturing drugs and acids according to prescribed formulae; studies details of product producing methods employed in existing processes and laboratory.

(5) *Chemical Engineer, Petroleum.* Petroleum Refining Engineer—He develops new or improved techniques for treatment and refining of petroleum, extracts by-products, designs and supervises construction, installation and operation of equipment, plant, and works for such refining.

(6) *Chemical Engineer, Fertilizer.* He plans, designs and installs various types of chemical plants, equipments and machinery for manufacture of fertilizers, prepares plans showing layout of plant equipments for manufacture of fertilizers.

(7) *Chemical Engineer, Food.* He develops new or improved methods and techniques of food processing in manufacture of vanaspati, dairy and other food products; studies and checks details of product producing methods employed in existing processes or in laboratory for possible improvement.

(8) There are other chemical engineers who specialise in designing and installing chemical plants, developing techniques of production processes, sales of plants and equipments and manufacture of bricks, pottery, glassware, plastic, paper, oil, fat, soap, cosmetics, coal tar products, dye stuffs, etc.

V. Metallurgists

(1) *Metallurgist, Extractive.* Production Metallurgist—Process Metallurgist—He plans, organises and controls extraction of metals from ores, their conversion into industrially useful products and production of alloys.

(2) *Metallurgist, Adaptive.* Physical/Mechanical Metallurgist—He investigates properties and treatment of metals and supervises production of basic metals and alloys.

(3) Other Metallurgists are engaged in developing new types of alloys, supervising construction and repairs of metallurgical furnaces, testing, physical properties of metals and alloys, etc.

VI. Mining Engineers

(1) *Mining Engineer, Non-Metals.* He plans, organises and supervises extracting of stratified deposits of solid non-metal minerals like coal, fireclay, gypsum, mica, precious stones, etc. from earth by various mining processes.

(2) *Mining Engineer, Metals.* He plans, organises and supervises extraction of metallic ores like gold, silver, copper, iron, manganese, etc. and their preliminary treatment for further processing by underground or surface operations.

(3) *Mining Engineer, Petroleum and Gas.* He plans, organises and supervises work of extracting, storing and transporting petroleum and natural gas, supervises geological or geophysical surveys and studies earth samples and other data. He is also called by other designations as Production Superintendent, Production Engineer (Petroleum), Reservoir Engineer (Crude Oil), Mud Engineer (Petroleum), etc.

(4) Other Mining Engineers are engaged in consultation for planning and extraction of mineral products, conducting research in sampling of precious metals, fumes and ores, etc.

VII. Industrial Engineers

(1) *Industrial Engineer.* He performs a variety of engineering work in planning and overseeing utilization of production facilities and personnel in development or other subdivisions of industrial establishment; studies and plans equipment layouts, work flow and accident prevention measures to maintain efficient and safe utilisation of plant facilities.

(2) *Planning Engineer/Development Engineer.* He plans and directs activities for increasing operational efficiency in production of articles using appropriate machine at less cost; studies work orders, availability of raw materials, production methods and production capacity of machines.

(3) *Methods Engineer.* He plans sequences of operation to be followed for manufacture of articles; examines blue-prints, sketches and specifications of products to be made, lays out steps to be followed in process using knowledge of materials, machine operations, plant layout and mathematics to select least expensive and most efficient production methods.

(4) *Time and Motion Study Engineer.* He develops work measurement procedures and directs time-aids-motion studies to promote efficient and economical utilization of personnel and facilities, directs or conducts observation and analysis of personnel and work procedures to determine time and motion requirements of job duties.

(5) *E. timator Engineer.* He prepares cost and work completion estimates for engineering works; compiles itemised materials and price lists from blue prints and specifications and itemises equipment readily available or to be purchased from outside sources.

(6) *Safety Engineer.* He inspects industrial plants for hazards, suggests measures preventing or reducing industrial accidents, or diseases or for correcting other injurious environmental conditions which create hazards to life and property or reduce workers' morale and efficiency.

(7) Other Industrial Engineers are engaged in proper utilization of machine and manpower, safety devices and other industrial problems.

VIII. Technologists

(1) *Works Inspector, Engineering.* He inspects and tests raw materials and finished products in factory or institution, using various testing and measuring equipments and ensures that raw materials and finished goods conform to specified standards. He is also designated as Boiler Inspector.

(2) *Instrument Engineer.* He designs and supervises operations and maintenance of electrical, mechanical and thermal instruments and control equipments necessary for safe and efficient operation of industrial plant.

(3) *Agricultural Engineer.* He applies engineering principles to solve related agricultural problems; designs, develops and supervises manufacturing of agricultural machinery such as pumps and irrigation equipments, tractors, cultivators, sprayers, dusters and harvesters.

(4) *Textile Technologist.* He conducts research in chemistry of textiles and institutes methods to control processes for bleaching, mercidizing, sizing and dyeing textiles; prepares formulae for various phases of processing.

(5) *Jute Technologist.* He conducts research and impresses standard and quality of jute fibre and jute products; carries out research in physical, chemical and testing laboratories and suggests measures for increasing agricultural yield of jute by scientific sowing, reaping and harvesting.

(6) *Fibre Technologist.* He conducts research in extraction and utilization of vegetable (animal or synthetic) fibre such as jute,

etc. and develops techniques for spinning and weaving of fibres and for pulping fibre for making utility goods.

(7) *Spinning Master*. He organises, controls and supervises various processes in spinning yarn from various fibres such as wool, jute, cotton etc., directs mixing and blending of different grades of fibres, produces yarn of required quality.

(8) *Weaving Master*. He organises, controls and supervises weaving of cloth, calendering and processes preparatory to weaving such as, winding, warping, sizing etc., instructs jobbers for proper winding and warping of yarn.

(9) *Dyeing and Bleaching Master (Textile)*. He organises, controls and supervises dyeing and bleaching of yarn and cloth; controls casting of all incidental processing of dyeing, bleaching etc., and determines dyes and their proportions of dyeing yarn and cloth to required colour and shade.

(10) *Printing Master (Textile)*. He organises, directs and supervises printing of cloth in various designs ensuring quality, output and smooth running of printing department; arranges for supply of necessary chemicals and dyes.

(11) *Food Technologist*. He devices new or improved technique for processing, conservation, preservation, utilization and evaluation of contents of new food stuffs generated from plant and animal life and suitable for human consumption and animal breed.

(12) *Sugar Technologist*. He conducts research and devices improved methods and processes for manufacture of high quality sugar and other by-products such as molasses, power alcohol etc., studies physical and chemical properties of raw cane-juice etc.

(13) *Alcohol Technologist*. He conducts research for manufacturing industrial and beverage alcohols, rectified spir. and by-products, receives cultures of different varieties of yeast from distilleries, documents them into different varieties, tests them into laboratory, formulates results and sanctions its use by public.

(14) *Oil Technologist*. He conducts research to develop new or improved processes for manufacture of oils, soap, vanaspati, paints, varnishes, perfumes, essential oil and allied products etc; studies physical and chemical properties of raw material; of oils, fats, oil-products, e.g., oil seeds.

(15) *Wood Technologist*. He conducts experiments and investigates problems connected with seasoning, preservation and utilization of timber and its by-products and evolves methods for curing timber, testing it for strength, converting it into charcoal, plywood, etc.

(16) *Fuel Technologist*. He analyses physical and chemical properties of fuels (solid, liquid and gaseous) in laboratories and plants and develops improved processes and techniques for optimum utilization of their heating capacity.

(17) *Rubber Technologist*. He develops production processes for manufacture of rubber products such as tyres, tubes, sports goods, rubber gloves and hot bags; analyses physical and chemical properties of raw materials such as crude rubber, zinc oxide, acids, anti-oxidants, oil softeners, colour pigments etc., and evolves formulae for mixing raw materials in different proportions for manufacturing of different types of rubber products.

(18) *Leather Technologist*. He conducts research for developing tanning processes for manufacture of leather, conforming to prescribed standards; examines hides and skins for structural defects; studies preservative methods practised and suggests improvement in existing methods of preservation and drying for making better leather.

(19) *Glass Technologist*. He conducts experiments in chemistry of glass, develops and controls processes involved in manufacture of glass products; devises and installs laboratories and batch control systems; selects formulae to be used in compounding standard types of glass.

(20) *Ceramic Technologist*. He conducts research, develops processing techniques and supervises technical work concerned with manufacture of ceramic products; supervises testing of physical, chemical and heat-resisting properties of materials such as clay and silica.

(21) *Paper Technologist*. He evolves and supervises chemical and technological processes for production of quality paper; conducts research in laboratories for maximum utilization of indigenous raw materials and reduction of industrial wastes.

(22) *Plastic Technologist*. He evolves, adopts and supervises various processes for manufacture of synthetic material called plastic; carries out research in laboratories to determine chemical composition and physical qualities of various raw materials and substances.

(23) *Printing Technologist*. He conducts research and develops better and economical printing processes for use in printing industry; evolves processes of letter press printing, off-set printing, gravure printing and screen printing.

(24) *Traffic Planner*. He studies vehicular traffic conditions on urban or national highways and develops plans for altering conditions to promote safety and reduce congestion.

(25) Other Engineers/Technologists are engaged in research work in laboratories and application of results thereof of manufacture and practical problems.

IX. Flight Engineers

(1) *Chief Flight Engineer*. He plans, coordinates and supervises work and ensures removal of defects or deficiencies in aircrafts observed during flight and pointed out in flight reports.

(2) *Check-Flight Engineer*. He checks work of flight Engineer and ensures correct execution of his responsibilities with regard to pre-flight, in-flight and post-flight and renders reports to Chief Flight Engineer.

(3) *Flight Engineer*. He makes pre-flight, in-flight and post-flight inspection, adjustments and minor repairs to ensure safe and efficient operation of aircraft.

(4) *Chief Navigator, Aircraft*. He controls and supervises work of Check Navigator and Navigator and advises management on feasibility of undertaking flights on new routes

(5) *Check Navigator, Aircraft*. He observes periodically work of Navigators during flights and reports on his abilities and efficiency of various navigational aids used, to higher authority.

(6) *Navigator, Aircraft*. He advises pilot of aircraft on position of aircraft, weather conditions and deviation of course during flights using charts and other navigational aids.

X. Ship Engineers

These engineers plan and supervise engineering activities of engineers and technicians aboard ship; operate, maintain and repair engines, motors, pump, condensers, and all other types of mechanical and electrical equipments on vessels afloat: direct maintenance, repair and replacement of mechanical equipments to ensure safe, efficient and uninterrupted navigation. All these engineers are designated according to their status as Chief Engineer, Ship/Chief Engine Officer, Ship, Second Engineer, Ship/Second Engine Officer, Ship; Third Engineer, Ship/Third Engine Officer Ship; Fourth Engineer, Ship Fourth Engine Officer, Ship, Fifth Engineer, Ship/Junior Engineer, Ship. Other ship engineers are engaged in maintenance of ship and deck machinery, dredger etc.

The description given about each of the engineers is very brief and indicative of the type of work they are expected to perform. Candidates will have to obtain full details about them.

CHAPTER 29

CAREERS IN MEDICINE (MEDICAL PRACTITIONERS)

The most sought for careers in India are in Medicine confined to Allopathic system and particularly at graduate level in different branches of medicine. The attraction to become a doctor is so dominating and compulsive that other equally important careers in medicine are almost neglected.

A student feels fortunate enough when he is allowed to select science stream at 10+2 level and caresses a hidden wish to become a doctor not because he is eligible by virtue of his aptitude, interest and personality dispositions but because, perhaps, the attraction of the career as doctors. Since admission in the medical colleges is effected on the sole basis of performance in the qualifying examination (12th with science subjects like physics, chemistry and biology), the other vitally important aspects of personality become irrelevant. Therefore these have not been discussed. This chapter, therefore, gives compact information about the admissions in the medical colleges.

Before collecting detailed information on admission in different medical colleges it becomes incumbent on the part of a candidate to know little more about medical men who attend to our ailments.

A doctor's job is to give medical attention to his patients and raise the standard of health of the citizens of the country. As a professional, he is expected to think more of his patients rather than his own comforts and monetary gains. But the picture that we witness is in the reverse gear. And this puts the profession into disrepute. Compared to other countries health standards in India are much low because of superstitions rampant in the Indian society despite the fact that all the sources of good health are abundant in our country. The only thing that is needed is to create awareness among the public about their personal as well as public health. That is the foremost duty of the doctors.

In our country, few urban areas are overflowing with doctors whereas major areas are parched of them. This inverse ratio has to be removed immediately. Doctors should choose to go to rural areas where their need is more. The country's resources cannot be squandered mindlessly as is being seen today. To turn a single doctor

average expenditure incurred is Rs. 250,000/-, many more times than what is incurred on an ordinary graduate. If a doctor's services are not utilised for raising the health standard of the society, then the whole expenditure is drained down the gutter. As a matter of fact, a doctor-patient ratio in India is very high. It further becomes a matter of grave concern when certain pockets of the country are overflowing with doctors and the remaining thirst for them. If doctors are not available to take care of them, of what use is the profession for them. The doctors, for want of better earnings, because of their unwillingness to go to rural areas choose to cross the country and cause the brain drain. This is a serious matter.

If carefully thought, if we are able to lessen the ratio of a doctor-patient, there are definitely vast openings for these people and the planners will be compelled to go for increasing the number of medical colleges simultaneous to increasing the intake capacity of the current ones. Alongwith, other medical and para-medical professionals will be in quite good demand. That way the problem of unemployment will be reduced to some extent. The would-be-doctors' positive thinking will help raising the individual and public health standard, develop healthy society and open opportunities for the unemployed. With this end in view young people should think deep and then try to seek careers in the medical field. The information given in the table will help them in this regard.

Abbreviations expanded

PCBEZM = Physics, Chemistry, Biology, English, Zoology, Maths

SC/ST = Scheduled Caste/Scheduled Tribe.

GOI = Government of India

B = Backward Classes

FF = Freedom Fighters (Political sufferers)

DF = Defence Forces (Present serving personnel, Ex-Service-men, Disabled, Ex-Servicemen killed in action.)

PHP = Physically Handicapped People.

EE = Entrance Examination.

Important Note: 15% Seats in all medical Colleges in India except J & K and Andhra Pradesh will be filled in on All-India level through a competitive examination to be conducted by the Central Board of Secondary Education, New Delhi.

Admission to the Medical Colleges in India (MBBS Course)

State	Medical Colleges at	Age	Qualifications	Domicile	Total Seats	Reservations for application in	Request Last date of Sub-mission	Application obtainable from	Mode of entry	
1	2	3	4	5	6	7	8	9	10	11
1. Assam	Dibrugarh, Guwahati, Silchar.	17-24 yrs. +3 yrs. for SC/ST.	Pre-degree or equi. in PCBE with 50 per cent SC/ST—45 per cent	20 yrs. permanent residence in the State.	270	SC-7%, ST-10 per cent Meghalaya-9, Arunachal Pradesh-1, Backwards-6 Children of DF, 9 Assam-2, Tea Garden Labour-2, Immigrant Muslims-3, Freedom fighters of Assam-4, CG Employees-6, Govt. of India nominees-20, Discretionary-5, General-159.	May 15 days after result of qualifying Exam.	Principal result of qualifying Exam.	Merit in the qualifying Exam.	

2. Bihar	Bhagalpur, 17 Muzaffarpur, Gaya, Darbhanga, Patna, Jamshedpur, Dhanbad, Ranchi.	Inter science or equi. with Eng./Modern Indian Language, PCB.	Studied con- tinuously for 10 yrs. in the State.	720 SC-14 per cent, ST-9 per cent, Backward- 10 per cent, Girls-20 per cent, some seats reserved for Govt of India no nines, self-financing Nepalese students, TISCO, Shri Laxmi Narayan Trust & Coal Mines Welfare Orga.	June	July	Principal Rs. 4(IPO)	Joint entrance Exam. in PCB & Inter- view
3. Delhi	3 Colleges	12th with PCBE.	--	410 SC/ST-82, Govt. Nomi- nees-6. DF-20.	April	April	Faculty of Medical Science of Delhi University, Exam on payment in First of Rs. 2/- (IPO)	Com- mon Entrance Exam in First Week of July.
4. Goa	Panaji	12th in PCB with 50 per cent (40 per cent for SC/ ST.	5 yrs. stay in the territory.	70 SC-11, ST-2, Backward-1, Govt. nominees-3, PHP-1, FF-2 other categories-7.	June	June/ July.	Dean of the college on payment of Rs. 2/- (IPO).	Quali- fying Exam. of Rs. 2/- (IPO).

1	2	3	4	5	6	7	8	9	10	11
5.	Gujarat Baroda, 17 Ahmadabad, Jamnagar, Surat.		12th in PCBE with 55 per cent (45 per cent for SC/ST).	Domicile of the State.	675	SC-7 per cent, ST-23 per cent, B-10 per cent, Govt. 10, Donors-12, DF-2.	May	within 10 days of the qualifying Exam.	Dean of the College Rs. 2/-	Qualifying Exam.
6.	Haryana Rohtak	17	Pre-medical in PCBE with 50 per cent (40 per cent for SC/ST).							
7.	Himachal Simla Pradesh.	17-24	Pre-medical in PCBE with 50 per cent (40 per cent for SC/ST).	3 yrs. residence in the State.	160	SC-9, ST-3, Govt.-5, B-2, State Nominnee-3, DF-1.	2nd week of July.	3rd week of July	Registrar H.P. University Rs. 10/-	EE in PCB.
8.	J & K Jammu, Srinagar.	17	"	Permanent residence, in the State.	136	SC/ST-8 per cent, DF-3 per cent, Govt. employees 1 per cent, FF 2 per cent, B-18 per cent,	June	Two weeks after advertisement.	Principal Rs. 10/-	Qualifying Exam. & Written Exam.

9. Karnataka	Mysore, Bangalore, Hubli, Bellary.	17	Pre-Uni. PCB with 50 per cent (45 per cent for SC,ST) Graduate application in PCB.	5 years Study in the State prior to date of application	450	SC-15 per cent, ST-3 per cent, B-20, Students-15 per cent, Govt. 3, DF-2, FF-2, 10 per cent seats reserved for graduates.	June/ July.	S/M-2 per cent, Bad Pockets-2, Ladak & Kargil-4 per cent	Determined from time to time.	Principal Inter-view. Rs. 10/-
	<i>Private Colleges</i>									
	1. St. John's 17 Medical College, Bangalore.	"	"	"	60	SC-18 per cent, Govt. 1, Karnataka Students-33 per cent.	March	April	Principal Rs 20/-	EE
	2. Jawahar Lal 17 Nehru Medical College, Belgaum, Capitation Fee. (1) Karnauaka Students 60000/- (2) Others-16000/-	"	"	"	100	Karnataka candidates- week 65 per cent, of May. KLE Society-10 per cent, Others-25 per cent	3rd,4th	20 days after advertisement.	Principal	Qualifying Exam.

1	2	3	4	5	6	7	8	9	10	11
	3. M.R. Medical College, Gulbarga. Capitation Fee.	17	"	10 yrs. education in the State.	100	58 per cent seats reserved for Spl. Categories.	July	July	Principal Rs. 10/-	"
	(1) Karnataka Students-60000									
	(2) Others-160000									
	4. Kasturba Medical College Manipal.	17	Pre-University in PCB with 75 per cent.	As stipulated by the State Govt.	225	Usual reservation.	May/June	June/July	Registrar Board of General Educn., Manipal Rs. 10/-	Merit
	5. J J M Medical College, Davangere.	17	Pre-University in residence PCB with 50 per cent.	5 years in the State.	125	Karnataka Students-65 per cent, Others-35 per cent,	June	July	Principal Rs. 10/-	Qualifying Exam.
	10. Kerala Trivandrum, Calicut, Kottayam, Alleppey.	17	Pre-degree in PCB with 50 per cent (SC/ST-40 per cent, B-45 per cent).	"	600	SC/ST-10 per cent, some seats are reserved for other spl. categories.	Aug.	Aug.	Principal Rs. 10/-	"

11. M. P.	Rewa, Bhopal, Indore, Jabalpur, Gwalior, Raipur.	16	Pre-degree in PCBZ.	Bonafide residents of the State.	720	SC/ST-15 per cent, Govt 3 per cent, J & K-3, Women-15 per cent, FF-3 per cent.	March/ April. Declared later. Rs. 10/-	Principal	EE in PCBZ.	
12. Maharashtra	Bombay (4), Pune, Nagpur (2), Aurangabad, Sholapur, Ambajogai.	17	12th in PCBE with 50 per cent (40 per cent for SC/ST)	Domicile within State.	1344	SC-13 per cent, ST-7 per cent, B-4 per cent, OB-10 per cent, Govt. 10, DF-1.	July	15 days after result of the qualifying examn.	Dean, Medical College.	Qualifying Exam.
13. Manipur	Imphal	17	Intermediate in PCBE with 70 per cent.	10 years residence in PCBE in participating States.	75	Tripura-18, Meghalay 10, Nagaland-7, Arunachal Pradesh-5, Mizoram-5, Manipur-30.	May	June	Principal Rs. 2/-	EE in PCBZ in July.

1	2	3	4	5	6	7	8	9	10	11
14. Orissa	Berhampur, Sambalpur, Cuttack.	17	Inter Science in PCB	Permanent residents of Orissa.	325	SC-8% ST-12% Govt-8.	Suitable	Suitable	Principal, Rs. 6/-	EE. in PCB.
15. Pondicherry	Pondicherry.	17	12th in PCB with 50%.	35 seats are open for other candidates.	65	Pondicherry, 15. (SC-3, ST-1) Govt. Nominees-15, General-27, SC-6, ST-2.	April	May	Director Rs. 2/-	EE in PCBE in June.
16. Punjab	Amritsar, Patiala, Faridkot.	17	Pre-medical in PCB with 50% (SC/ST-45%)	Domiciles in the State.	360	SC/ST-25%, B-5%, Backward Area 2%, Sportsmen-2% Govt 5%, Border Area-2%, FF-2%, DF-2%, PHP-1%.	June	June/July	Principal, Rs. 4/-	EE.
17.	Other Colleges (1) Christian Medical College, Ludhiana.	17	"	—	50	Domicile-25, Other States-5, College Quota-20, SC/ST-25%, B-5/-	March	May	Registrar of the College Rs. 14/-	EE in June.

(2)	Dayanand Medical College, Ludhiana	17	"	Residents of the State.	50	SC/ST-13, B-2, Staff Nominee-1,	June July	Principal, Rs. 15/-	Qualifying Exam.
18.	Rajasthan Jodhpur, Ajmer, Udaipur, Jaipur, Bikaner.	17	Pre-Degree in PCBE	3 Years regular education in the State	550	SC-8%, ST-6%, Govt 15, Girls-25% Other States-5	June July	Registrar, University of Rajasthan	EE in PCB and Inter-view.
19	Tamil Nadu.	17	12th in PCB with 50 (45% for SC/ST)	Residents of the State	1040	SC ST-18%, B-50	May June	Principal. Rs 2 -	Qualifying Exam. and Inter-view
	Chingleput, Coimbatore Madras(3), Thanjavur, Madurai, Tirunelveli								
	Other College	17		Open to All.	60	College quota 45, Open Govt-I, Low income Group-33% (Less than Rs 10000/-) SC/ST-20%	Feb /April March	Registrar of the College Rs 10 -	EE in PCB and General knowledge
	Christian Medical College, (Vellore)								

1	2	3	4	5	6	7	8	9	10	11
20. U.P.	Agra, Allahabad, Gorakhpur, Kanpur, Jhansi, Lucknow, Meerut.	17	Inter Science in PCB.	Bonafide residents of the State.	789	Females-78 Hill Area-20 (50% for Females), Uttar khand-23, 50% for females) SC-40%, ST-16, FF-8, DF-8, B-93 (62 males, 31 females) General-390.	May	June	Registrar of the Convener University Rs. 10/-	EE in PCBZ.
Other Colleges										
(1)	Jawahar Lal Nehru Medical College, Aligarh.	17	Pre-medical with English and 50% in PCB.	Residents of the State-25 Seats for other State.	50	Students of the University-25 Girls-5 (each category)	May/ June	July	Asstt. Registrar Aligarh Muslim University Aligarh. Rs. 35/-	EE in
(2)	Institute of Medical Science, Varanasi.	17-25	Pre-medical in PCB with 50% (45% for SC/ST).	Open to all.	59	SC/ST-10 Govt-4.	Dec./ Jan.	Feb./ March	Director of the Institute view Rs. 2/-	EE and Inter-

21. W.B.	Burdwan, Bankura, Calcutta(4), Darjeeling.	17	12th in PCBE and Vernacular.	Bonafide residents of the State.	755	SC-14%, ST-5%, Some seats for Govt/WB/Donors' Nominees.	Jan. Feb.	Chairman, Central Selection Committee, Medical College Hospital, Calcutta.	EE in PCBE in May.
22. A.P.	Vishakhapatnam, Guntur, Kakinada, Warangal, Hyderabad (2), Kurnool, Tirupati, Vijaywala.	17-22 (25 Yrs. for Grad.)	Inter Science in PCBE with 50% for (45% for SC/ST).	Local candidates should have studied continuously for 4 years in the State. other candidates for 7 years in the State.	1000	SC-14%, ST-4%, B-25%, GE-2%, 85% seats reserved for local candidates.	July. Aug.	Principal Rs. 5/-.	EE in PCBZ in August.
23. Delhi	Other Colleges: All India Institute of Medical Sciences.	17	12th in PCBE with 60% (50% for SC/ST).	Open to all	50	SC-7, ST-3, Govt. 5.	Jan./ Feb.	Director of the Institute Rs. 5/-.	EE in PCB and General knowledge.

1	2	3	4	5	6	7	8	9	10	11	12
<i>Other Colleges</i>											
1.	Mahatma Gandhi Institute of Medical Science, Sevagram, Wardha.	17	12th in PCBSE with 50% (45% for SC/ST).	50% seats for candidates from other States.	65	SC-8, ST-4, Govt-2, Maharashtra-2, Kasturba Health Society-1, Rural areas-12.	March/ April	Principal, Rs. 20/-	EE in PCB in July.		
2.	Armed Forces Medical College Pune.	17-22	12th in PCB with 50% and should have passed in Maths of 10th class	Open to all	120 (95 boys, 25 girls)	SC/ST-10, 60 seats for those who must serve in the Armed Forces.	Jan. March.	Commandant AFMC, Pune Rs. 25/-	EE in aptitude and General Knowledge and Science subject and Interview.		

Note : Students are advised to approach the original sources for detailed information. There are prospectuses of individual medical colleges and advertisements. The information given in the chapter should be used for general guidance only.

Preparations needed : (i) Preparing a folder of Certificates (including their attested copies) of the following certificates,

- 1 SSC Certificate (which gives date of birth)
 - 2 12th Class Certificate (which gives subjects)
 - 3 Mark Sheet of 12th Std (which gives % age of marks)
 - 4 Domicile Certificate (needed to indicate residential status)
 - 5 Caste Certificate (for reserved seats)
 - 6 Residence Certificate issued by proper authority (indicating special category for reserved seats)
- (ii) Preparation for the Entrance Examination: Reference books on General Knowledge, Objective Type Test, Aptitude Test, English Tests.
- (iii) Filling up applications and IPO (Indian Postal Order)
- (iv) Copies are attested by Gazetted Officer of the State or Central Govt
- (v) Get the photograph on the application attested
- (vi) It is better to get photostat copies of certificates. These photostat copies should also be got attested by the gazetted officer
- (vii) Consult a knowledgeable person
- (viii) Never depend on one alternative

In several Medical Colleges/Institutes Specialised Diploma/Degree Courses are available after first graduation in Medicine *i.e.*, M. B. B. S. A list of such courses is given below after which a short description on each field follows.

Sl. No.	Diploma/ Degree	Long Form of Diploma/Degree
1.	D.A.	Diploma in Anaesthesiology
2.	Dip. B.M.S.	„ „ Basic Medical Sciences
3.	D.C.D.	„ „ Chest Diseases
4.	D.C.H.	„ „ Child Health
5.	D.C.P.	„ „ Chemical Pathology
6.	D. Dermat.	„ „ Dermatology
7.	D.D.V.	„ „ „ and Venereology
8.	D.G.O.	„ „ Gynaecology and obstetrics
9.	D.G.M.	„ „ General Medicine
10.	D.G.S.	„ „ „ Surgery
11.	D.H.E.	„ „ Health Education
12.	D.H.S.	„ „ „ Statistics
13.	D.I.H.	„ „ Industrial Hygiene
14.	D.L.O.	„ „ Laryngology-Otology
15.	D.M.C.W.	„ „ Maternity and Child Welfare
16.	D.M.C.H.	„ „ „ „ „ Hygiene
17.	D.M.R.D.	„ „ „ „ „ Medical Radiology and Diagnosis
18.	D.M.Ġ.E.	„ „ „ „ „ „ „ Electrology
19.	D.M.R.	„ „ „ „ „
20.	D.M.R.T.	„ „ „ „ „ Therapy
21.	D.M S.P.	„ „ „ „ „ and Social Psychology
22.	D.O.	„ „ Ophthalmology
23.	D.N,	„ „ Nutrition
24.	D.O.M.S.	„ „ Ophthalmic Medicine and Surgery
25.	D.O.R.L.	„ „ Oto-Rhino-Laryngology
26.	D. Ortho	„ „ Orthopaedics
27.	D. Paed	„ „ Paediatrics
28.	D. Phil (Med)	„ „ Philosophy in Medicine
29.	Dip. (P.S.M.)	„ „ Preventive and Social Medicine
30.	D.P.B.	„ „ Pathology and Bacteriology
31.	D.P.H.	„ „ Public Health
32.	Dip. (P.H.E.)	„ „ Public Health Engineering

Sl. No.	Diploma Degree	Long Form of Diploma/Degree
33.	D.P.M.	Diploma in Psychological Medicine
34.	D.R.M.	„ „ Radiation Medicine
35.	D. Sc.	Doctor of Science
36.	DTCD/DCTD	Diploma in Tuberculosis and Chest Diseases
37.	DTD/TDD	„ „ „ Diseases
38.	D.V	„ „ Venereology
39.	D.V.D.	„ „ Venereal Diseases
40.	F.C.P.S.	Fellow of College of Physicians and Surgeons
41.	L.M.P.	Licentiate in Medicine Practice
42.	L.M.S.	„ „ „ and Surgery
43.	L.P.H.	„ „ Public Health
44.	L.T.M.H.	„ „ Tropical Medicine and Hygiene
45.	M. Ch.	Master of Chirurgery
46.	M.D./D.M.	Doctor of Medicine
47.	M.D. (Mid)	„ „ „ (Mid-wifery)
48.	M.D. (TB)	„ „ „ (Tuberculosis)
49.	M.E. (P.H.)	Master of Engineering in Public Health
50.	M.H.A.	Master of Hospital Administration
51.	M.N.	Master of Nursing
52.	M.O.	„ „ Obstetrics
53.	M.S.	„ „ Surgery
54.	M. Sc.	„ „ Science
55.	M. Sc. (Med)	„ „ (Medicine)
56.	M.S. (Oto-Rhino-Lary)	Master of Surgery (Oto-Rhino-Laryngology)
57.	Ph.D.	Doctor of Philosophy
58.	D.T.M.H.	Diploma in Tropical Medicine and Hygiene

Out of the diplomas/degrees awarded as in the table, the people of such qualifications are specialists in certain specific fields. By virtue of all these qualifications following occupations emerge. They are described below on broader lines.

(1) *Physician*. He diagnoses and treats ailments or disorders of human body, examines patients with equipments or records for clinical tests on the result of which he prescribes medicines.

(2) *Surgeon*. He diagnoses and treats injuries, diseases, disorders of human body by prescribing medicines or surgical operations; examines patients to determine nature and extent of injury or ailments for treatment by medicine and through operation. Surgery is of many kinds like orthopaedic, plastic, neuro, thoracic, genitourinary.

(3) *Anatomist*. He studies structures of human body and its parts to ascertain their position, functions and relations to each other in order to provide basic knowledge in diagnosis and treatment of human disease; examines organs of body and its minute structures, tissues, cells, etc.

(4) *Anaesthetist*. He administers anesthetics to a patient undergoing surgical operation according to nature of operation; examines patients to determine their capacity to withstand shock of operation and anaesthesia; selects local or general type of anaesthetic to be administered such as ether, chloroform or cocaine according to nature of operation.

(5) *Psychiatrist*. He diagnoses and treats human mental diseases and disorders; conducts examination of body for abnormal behaviour of mental activity and relates abnormality to diseases and disorder of other systems of body.

(6) *Neurologist*. He is a nerve specialist. He diagnoses and treats nervous diseases of human beings; conducts examination of different parts of nervous system to find cause of disorder or location of defect and relates disorder to diseases or disorder in other parts/systems of body.

(7) *Dermatologist*. He diagnoses and conducts treatment of ailment of human skin; examines patients to locate cause of skin disorder and relates disorder to diseases or disorders in other parts/system of body.

(8) *Ear, Nose and Throat Specialist*. He diagnoses and conducts treatment of diseases and disorders of ear, nose and throat; conducts examinations of ear, nose and throat for observation of defects/symptom and relates disorder to diseases or disorders to infections in other parts of body.

(9) *Cardiologist*. He is also called heart specialist who diagnoses and conducts treatment of diseases and disorder of heart and blood circulation system of human body; examines blood circulation system to find cause of disorder or location of defects and relates disorders to diseases or disorders in other parts of body.

(10) *Radiologist*. He diagnoses diseases and disorders of human system by studying X-Ray pictures of affected parts or seeing them on fluoroscopic screen and gives treatment such as therapeutic radiation of diseased part of body.

(11) *Tuberculosis Specialist*. He diagnoses and conducts treatment of ailments due to infection by tubercular disease; conducts examination of different parts of body to locate nature of disorder and relates it to infections in other parts of body.

(12) *Ophthalmologist*. He is eye specialist who diagnoses and conducts treatment of diseases and disorders of human eye; conducts examination of eye-ball and its related parts using ophthalmoscope to locate cause of disorder or location of defect and relates it to disease/disorder of other systems of body.

(13) *Venereologist*. He diagnoses and conducts treatment of human diseases; examines patients and makes or arranges for special tests e.g., blood, urine, stool etc., and investigates into causes of infections and social diseases acquired venereally.

(14) *Obstetrician*. He diagnoses and conducts treatment of diseases and disorders of human female reproduction system during prenatal, natal and post-natal periods; conducts examination of pelvic organs and girdle for integrity and adequacy.

(15) *Gynaecologist*. He diagnoses and conducts treatment of disease and disorder of female genital organs, conducts examination of body for symptoms of disease and disorder of other systems of body.

(16) *Pædiatrician*. He diagnoses and conducts treatment of diseases peculiar to children; studies nature of growth and development of children and establishes form of growth.

(17) *Orthopaedist*. He diagnoses and conducts treatment and correction of diseases/deformities of skeletal system; examines different parts of body structures to locate cause of disease/disorder and relates it to other diseases of other parts of body.

(18) *Dentist*. Also called as Dental Surgeon, he treats surgically and medically diseases and disorders of teeth, gums and soft tissues of mouth; examines mouth and teeth of patients by clinical tests and administers medicines; cleans teeth and fills cavities.

(19) *Bacteriologist*. Also called Micro-biologist, conducts research and laboratory experiments on occurrence, growth, development, control and utilization of bacteria and other micro-organisms affecting plant, animal and human life.

(20) *Pharmacologist*. He studies effects of drugs on human beings and animals and evolves formula for manufacture of drugs and medicines for prevention and treatment of diseases.

(21) *Pathologist*. He conducts chemical, microscopic and bacteriological tests in laboratory and examines blood, tissues, urine, etc., of patients to find out causes of disease.

(22) *Malariologist*. He conducts research on causes and effects of malaria in human system by studies in laboratory and

directs anti-malarial operations; plans, organises and undertakes measures for control and eradication of Malaria.

(23) *Physiologist*. He studies normal functioning of different organs and tissues of human body and investigates effects of physical environments such as variations in attitude, speed, temperature, etc., on its vital functions.

(24) *Nutritionist*. He organises, plans and conducts programmes concerning nutrition to assist in promotion of health and control of diseases; gives instructions to auxiliary medical personnel on food values and utilization of foods by human body.

(25) *Health Officer*. He plans, organises and executes curative and preventive measures against epidemics and infectious diseases, maintains sanitary conditions according to prescribed standards within specific areas and promotes community efficiency of physical, mental and social health standards.

(26) *Naturopath*. Or called as Matroopathy, examines patients to diagnose ailments and prescribes necessary treatment according to science of nature cure.

(27) *Chiropodist*. Also called Pedicurist treats foot diseases and abnormalities; removes corns, blisters etc., using surgical instruments.

(28) *Nurse*. She provides professional, general and specialised nursing care for sick, injured and infirm for treatment of physical and mental disorders; gives nursing care and advice; assists physicians and performs other nursing tasks and community health service in hospitals, clinics, sanatoria, schools, factories, medical establishments, private homes and elsewhere.

(29) *Medical Social Worker*. He assists in solving social and emotional problems of individuals in relation to illness. Acts as a liaison between physicians, occupational therapists and patients.

CHAPTER 30

COMPETITIVE EXAMINATIONS OF UNION PUBLIC SERVICE COMMISSION

“We made a tryst with destiny and now the time comes to redeem our future not wholly or in full measure but very substantially. Today when the world sleeps, India will awake to freedom and liberty”. This is a quote from Pt. Jawaharlal Nehru’s speech given in the Constituent Assembly on the eve of our Independence on 14/15th August, 1947. See the stress that has been laid on the word ‘we’. Prior to this day India was ruled by the British during which this ‘we’ was not free from the dominance of the few.

Britishers managed their Governmental affairs by choosing few of this ‘we’ inducting them to the Indian Civil Service termed as the Steel Frame of India. In our free society ‘we’ also need people to manage the affairs of the world’s largest democratic country India. Earlier, ICS was Government oriented, now it has to become people-oriented—they are to serve their own people. These highly placed officers are placed at the helm of the Government playing a dominant role next to politicians.

It is apparent that such people to be placed at key positions must be selected systematically and meticulously. Union Public Service Commission has been assigned this onerous task. It conducts various competitive examinations followed by interview through which candidates are assessed of their ability and those found suitable are selected. Among the various examinations it conducts the most important is the civil services examination for selection of candidates to manage administration, foreign affairs, revenue system and other important state functions. The Civil Services Examination includes the following services for which candidates are selected. It is called IAS and Allied Services Exam.

- (1) Indian Administrative Service
- (2) Indian Foreign Service
- (3) Indian Police Service
- (4) Central Information Service
- (5) Indian Audit and Accounts Service
- (6) Indian Customs and Central Excise Service
- (7) Indian Defence Accounts Service
- (8) Indian Income-Tax Service
- (9) Indian Ordnance Factories Service
- (10) Indian Postal Service

- (11) Indian Railway Accounts Service
- (12) Indian Railway Traffic Service
- (13) Indian Military Land and Cantonment Service
- (14) Central Secretariat Service
- (15) The Armed Force Headquarters Civil Service
- (16) The Customs Appraisers Service
- (17) Indian Forest Service
- (18) Indian Economic Service/Indian Statistical Service
- (19) Combined Engineering Services
- (20) Geologists Examination
- (21) The Delhi and Andaman and Nicobar Islands Civil Service
- (22) The Goa, Daman and Diu Civil Service
- (23) The Pondicherry Civil Service

There are two categories of officers who are selected through this examination. They are Group 'A' and Group 'B' categories. Candidates should get in touch with the original source

**Union Public Service Commission Competitive Examinations for
Various Services and Posts**

<i>Sl. No.</i>	<i>Name of Exam.</i>	<i>Age</i>	<i>Qualification</i>	<i>Request for application in</i>	<i>Last Date</i>	<i>Exam Fee</i>	<i>Commencement of Exam.</i>	<i>Scheme of Examination</i>
1	Combined Medical Services Exam	Below 30 years	MBBS	Sept	Nov.	Rs 28/-	February	Written test—One paper in General Medicine including Paediatrics, Surgery including ENT, Ophthalmology, Traumatology, Orthopaedics, Preventive Medicine and Community Health and other National Programmes.
2	Geologists' Exam	21-30	M.Sc in Geology or Marine Geology or Diploma or Associate-ship in Allied Geology.	Oct	Dec.	Rs 48/-	March	Written test—Papers : (1) General English, (2) Geology Paper I, (3) General Geology II, (4) Geology Paper III, (5) Hydrogeology (All objective type test)

1	2	3	4	5	6	7	8
3. Combined Defence Services Exam. for Indian Military Academy, Navy and Air-Force	For IMA, Navy and Air-Force 18-21, Married/Unmarried male.	Navy—Degree in Physics or Maths, for other Degree.	May and Oct.	Dec. July	Rs. 28/-	May and Oct.	Written — IMA — Eng; G.K. Ele. Maths Navy—G.K., Physics, Maths or Phy. (Ele) OTS—Eng., G.K., IAF—Eng., G.K., Maths, or Phy. For all—Interview, Intelligence and group tests, able to deliver a talk.
4. National Defence Academy Exam.	Un-married male 16-18½ on 1st Jan/1 July.	11th of 10+2 or equivalent.	July and Dec.	Jan. Sept.	Rs. 28/-	May and Dec.	Written—English, Maths, Science, Social Studies, Geography, Current events. Interview, Intelligence Test and be able to deliver a talk.
5. Indian Economics/Statistical Service	21-28	IES—Degree in Economics or Statistics ISS—Degree in Stats/ Maths/ Economics.	Jan.	March	Rs. 48/-	June	IES — Written — Paper (1) General Eng; (2) General Studies, (3) General Economics I; (4) General Economics II (5) Indian Economics. ISS—Papers—(1) General Eng. (2) General Studies, (3) Stats I; (4) Stats II; (5) Stats III.

6. Special Class Railway Apprentices Exam.	16-29	10+2 with Maths and either Phy. or Chem in first/second Division. Degree in Maths with either Physics or Chem	Jan.	March	Rs. 36/-	July	Written Papers: (1) Eng; (2) G.K. (3) Physics; (4) Chem. (5) Maths I (6) Maths II; (7) Psycho- logical Test.
7. Indian Forest Service Exam	21-28	Degree in Botany, Chemistry, Geology, Mathematics, Physics, Zoology, Agriculture or Engineering	Feb.	April	Rs. 48 -	July	Written-Papers : (1) General Eng. (2) G.K. (3) Optional two: Agricultural Botany, Chemistry, Civil Engi- neering. Geology, Agriculture, Engineer- ing Physics, Zoology, Except combination of Agriculture and Agri- culture Engineering and Chemistry and Chemical Engineering.
8. Engineering Services Examination.	20-27	B.E., M.Sc. in Wireless Comm., Electronics, Radio Phy- sics; or Radio Engineering.	Feb.	April	Rs 80/-	August	Written—Two Sec- tions—I Objective Type, II Conventional paper —Both papers cover relevant Engineering Disciplines, Personality test.

1	2	3	4	5	6	7	8
9.	Assistants' Grade Exam.	20-25	Degree	May	June	Rs. 28/-	October
							Written—Four Papers—(1) Essay; (2) English; (3) Arithmetic; (4) G.K. including Geography of India.
10.	Civil Services Examination. Two Parts (1) Preliminary (2) Main	21-28	Degree	For Pre: December Those qualifying the Pre have again to apply later	Feb	Pre. Rs. 20/- Main. Rs. 50/-	Pre-June Main-Nov./Dec.
							Written—Pre.: Two papers—I General Studies II one subject out of a given list. Main—Papers—(1) One Indian Language; (2) English; (3) and (4) General Studies; 5, 6, 7, 8 any two subjects from a list of optional subjects each having two papers. Those who qualify have to appear for interview.

General Information for Candidates

Information included in the table is based on the latest advertisements of the UPSC. Candidates should check details from the source as the information is likely to be changed.

All these examinations are open to all citizen of India, subjects of Nepal and Bhutan.

Application forms can be had from Secretary, UPSC, Dholpur, House, New Delhi-110001 by remitting Rs. 2/- by M.O. or IPO Payable to Secretary UPSC, New Delhi or in cash at the Commission's counter in person. A new system of paying Examination fees has been prescribed.

Application forms for Defence Exams can also be had from Recruiting Office, Military Area/Sub-area, H.Q. N.C.C. Directorates, Naval and Air Force establishments.

Age limit is relaxable for 5 years to SC/ST candidates. SC/ST candidates have to pay 1/4 of the exam fee payable through credit LPO to the Secretary, UPSC, New Delhi.

Physical Standards for Defence Service Examination:

Combined Defence Services Examination.

Height—Navy—157.5 cms; Air Force- 162.5 cms.

Weight—varies from 44 to 78 kg depending on age of candidates.

Relaxation of height by 5 cms to Gorkhas and people from hill areas of Garhwal & Kumaon and 2 cms for candidates from Laccadives.

NDA—Height—157.5 cms (151 for Navy), weight— 43.5 to 65 kg depending upon age and height of the candidate. Height relaxable by 5 cms to Gorkhas, Nepales, Assames, Garhwalis and for Naval candidates from Manipur, NEFA, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Tripura and 2 cms for candidates from Laccadives.

Ref. Book for Defence Examinations—‘A Study of Intelligence Test Scores of Candidates at Services Selection Board’ which can be had from Controller of Publications, Civil lines, Delhi-110054 or Kitab Mahal, Opposite Rivoli Cinema, Emporium Building, (C) Block, Baba Kharak Singh Marg, New Delhi or Govt. of India Book Depot, 7 S. K. Rop Road, Calcutta.

CHAPTER 31

LEARN WHILE YOU EARN

'Means decide ends' is quite true. Prospects lie ahead for those who have means to invest. Many of our young people have to discontinue their education because means do not allow them to pursue it. Even though constitution provides for equality, it is not possible to claim equality because of non-availability of means. Our common experience is that boys and girls discontinue education because of failure to pass examination, need for work at a sufficiently early age because of compulsions to earn bread and support family, high cost of professional and technical education and sometimes mere neglect or carelessness. In case of girls traditions and rendition of help in household chores keep them away from education. All these reasons lead these unfortunate people to serious repurgations in life.

Despite the fact that means do not allow some people to continue education there are some other daring people who procure their own opportunities and steer their ship to success quite honourably. The best example in history of the kind that can be cited is that of Booker T. Washington whose autobiographical sketch may enliven young people without means to reach the pinnacle of success. This is the autobiography of Booker T. Washington.—'UP FROM SLAVERY'. None-the-less, such dauntless people can only be counted on the tips of fingers. The problem remains unsolved of majority of people.

In India, over the past few decades, steps have been taken to ensure that higher education should not remain an exclusive preserve or pasture of the few—the affluent. Moreover, social justice also demands that no one who is eligible and desirous should be excluded from the higher education which is the first step in the process of career selection and its development.

Whatever may be the circumstances or reasons for discontinuation of education, there are not now enough opportunities for continuation of education and work simultaneously. It does not matter if some more time is involved but it is better than absolutely nothing. The workers who have missed the bus of education can now continue it. Recognising the demand of social equality and justice many of the universities, training institutions both in public and private sectors have come forward to quench the thirst of education of these people. They have made a provision of part-time correspondence courses or facilities of on the job training. Of late, there is a talk of an 'open university'. What

shape it will take and the type of help it will extend is not yet clear but such a university has come to exist. Persons who have to work perforce have now opportunities to excel in their profession through continuing their education through these part-time, correspondence or external courses or go for on-the-job training. The philosophy of education is to prepare persons for work and hence more and more universities are providing these facilities. In addition to these facilities, there is also other facilities called Apprenticeship Training. However, we have discussed this somewhere in this book and hence it has not been covered here

Evening or Part-time Courses. As the nomenclature suggests these courses are held in the evening so that desirous candidates can join them to improve their basic qualifications in their hours of off-duty. Many colleges have started such courses. It is not insisted, in some cases, that only those persons are eligible who are employed, but in some other cases, that is essential. It is also not compulsory that employed persons should pursue education related to their job but such a correlation is better for improving their skills and sometimes becomes essential condition. Some candidates join regular classes also since many colleges conduct their classes in the morning. Evening courses are also regular courses. But generally they are part-time courses involving more years of learning for the same course of regular nature.

Many craftsmen who have not received institutional or apprenticeship training can join these evening or part-time courses to improve their skills as also their career prospects. They are awarded certificates by the National Council For Vocational Trades. Certificate holders of Industrial Training Institutes can also join diploma courses in their branch of engineering. Likewise post-graduate courses in Engineering and Technology are also offered in a few specialities.

Employed architects, teachers, commercial and fine artists, business executives and journalists may pursue professional courses leading to a degree course or equivalent award in their respective branch of studies which qualifies them for senior posts under the Govt. or private sector establishments. Many candidates have taken the benefit of these courses and have enhanced their career prospects. Many times employers also sponsor their employees to attend such courses

Correspondence Courses. Correspondence courses are now as an effective mode of imparting instructions everywhere. Such courses help those persons who were denied the opportunity to prosecute their studies for one reason or the other. Many universities have offered this facility. The added advantage of these courses is that they avoid overcrowding of colleges or universities. Moreover where universities or colleges effect admissions on the basis of merit marks, many candidates are denied the opportunity because of low marks. These

students can join such courses. There is absolutely no difference of syllabi, curricula, number of years and the examination. They are the same as for the regular students. Under the system, experienced teachers prepare lessons on the syllabus including exercises and are sent to the students.

Instructions through postal lessons are supplemented by personal contact programme arranged conveniently during the course of the year at different places. Such courses give ample time for students to study because they are not required to hurry up to join any class which consumes more time in commuting in addition to the time of attendance. It can, therefore, be termed as a sparetime activity. Students can utilise such time in concentrating on their studies uninterrupted.

Professional Examinations

Professional preparation is done at three levels—certificate, diploma and degree level courses. Post-graduate courses in various disciplines and specialities make career prospects brighter. Persons already employed can also prepare in professions of their employment by joining institutions offering such courses. Information about these courses and institutions conducting them is given below. All these institutions have been recognised by the Central as well as State Governments for senior positions under their employ. These courses are comparable to the degrees awarded by the universities. Desirous students can enroll themselves with these professional institutions subject to their being educationally eligible.

(1) *Institute of Engineers, 8, Gokhale Road, Calcutta-700020*—To join this institute persons should have passed in 10+2 examination of science stream and must be 16 years of age. Passing of Section 'A' and 'B' of the Associate Membership of the Institute of Engineers Examination in any branch of Engineering, i.e., 7 branches of Chemical, Civil, Electrical Electronics and Communication, Mechanical, Metallurgical and Mining Engineering is a recognised qualification for senior posts under the Government.

(2) *Institute of Electronics and Communication Engineers, Lodhi Road, New Delhi-110003*—Persons having passed 10+2 with Physics, Chemistry and Maths and above 18 years of age are eligible. A pass in the graduateship examination of the institute is equivalent to a degree course of a university.

(3) *Aeronautical Society of India, 13-B, Indraprastha Estate, New Delhi-110001*—Persons having passed 10th class are eligible. No age limit has been prescribed. Those who pass Associate Membership Examination, Part II and III of the society are eligible for senior posts under the Government in their selected fields. Practical experience in aviation or in other branches of engineering is not necessary.

(4) *Indian Institute of Chemical Engineering, P.B. 17001, Raja Subodh Mullick Road, Calcutta-700032*—Persons who have passed 10+2 of science stream are eligible. No age limit has been prescribed. Associate Membership Examination of the Institute is a recognised qualification.

(5) *The Institute of Town Planners, Indraprasth Estate, New Delhi-110002*—Graduates in science/economics/sociology/geography/political science or a Diploma in Civil Engineering are eligible to join. No age limit has been prescribed. Passing of Associate Membership Examination of Institute is a recognised qualification for posts under the Government.

(6) *Indian Institute of Metal, 2, Sambunath Pandit Street, Calcutta-700020*—Science Graduates with Physics, Chemistry, Maths or diploma holders in any branch of engineering with one year's experience in industry, research or teaching institute are eligible. Persons who have passed X class or 10+2 examination with science stream and having experience of 6 years and 3 years respectively are eligible. Passing of the Associate Membership Examination is a recognised qualification.

(7) *Institute of Surveyors, Kashmir House, New Delhi-110011*—A pass in the final examination of the institute in any of the following branches:

(a) Hand Surveying, (b) Hydrographic Surveying, (c) Building, Quantity and Valuation Surveying is a recognised qualification.

(8) *Institution of Chemists, Medical College Campus, Calcutta-700012*—Graduates in chemistry and three years' training in the practice of chemistry are eligible. Final examination of the institute is equivalent to M.Sc. (Chemistry) of the University for employment purposes. The examination with Section 2 (Drugs and Pharmaceuticals) has been recognised in the Drug Rules of the Govt. of India for appointment as Drug Inspectors.

(9) *Indian Institute of Company Secretaries, 1, Rani Jhansi Road, New Delhi-110055*—Those who have passed 10+2 examination and are above 18 years of age can get admission in the institute for preliminary examination. Graduates are exempted from this preliminary examination. Associate Membership Examination of the Institute is a recognised qualification for the post of company secretaryship.

(10) *Indian Institute of Bankers, State Bank of India, Building, Apollo Street, Bombay-400001*—Graduates are eligible for the Associate Examination of the Institute on joining service in a bank. Persons passing this examination are allowed some advance increments.

(11) *Indian Merchants' Chamber, Bombay-400006*—Graduates in commerce are eligible for diploma examination of the chamber. Students on recognised institutions on roll for 6 months, members of teaching staff, employees of commercial and industrial establishments and companies having two years' experience are eligible. No age limit has been prescribed.

(12) *Federation of Insurance Institute, Bombay*—Only members of the associated institutes of the Federation are eligible to appear for the Licentiate Examination. Then they can appear for the Associate Examination. They should have passed X Class. No age limit has been prescribed.

(13) *Institute of Actuaries, Stapple Inn Hall High Holborn, London W-C-London*.—One can prepare for the profession of actuaries by passing the examination of the institute. Persons above 18 years of age and having passed 10+2 examination are eligible for appearing in the Preliminary Examination of the Institute.

In-Service Training

It is a common practice of many departments under the Government or outside of it to recruit persons first and then impart training to them as requirement of a particular organization by themselves or sponsoring them to other institutions for training.

Defence Forces, Protective Forces have their own arrangements for training people immediately after they are recruited. Information about them has already been included at other places. Railways, Insurance companies, Cooperative societies also have their own arrangements of training. Many commercial and industrial concerns induct people—even professionally qualified people and train them as per their requirements. These are called executive or management trainees. During the period of training these trainees receive stipend and after completion of a specific period these in-service trainees are placed in appropriate grades. We have also learnt about the apprenticeship training programmes. For those who are desirous of starting their own small-scale industry/cottage industry are also trained in many aspects like accountancy, management, marketing, sales, foreign trade, storekeeping etc. Relevant information can be had from the original sources main amongst which are advertisements. However, some information is given below:

Training Facilities by Small-Scale Industries Development Organization—The objective of the training is to equip persons already engaged in small industries with latest tools and techniques in their technical fields. Fresh candidates are not eligible.

Training in Industrial Management—Industrial Management course and other specialised courses are available which are of the duration of 10 weeks and 6 weeks respectively.

Specialised courses are in management, production, cost and budgeting control, purchasing and inventory control, marketing management, advertising and publicity and legal aspects.

Financial management courses include financial accounts, cost accounts, financial and cost analysis.

Production management courses include planning, organising, coordinating, standardization, simplification, purchasing, storekeeping, inventory control and work study.

Market management courses include distribution of management, sales management, salesmanship, market analysis, pricing, publicity, advertising and export marketing.

Export promotion courses include courses of information for export trade, product planning and development for foreign market, pricing documentation, packing and export literature.

Technical Training —Shop practice courses are in machine shop, foundry, blacksmithy, tool room, electrical testing, carpenting, fitter, machinist, sheet metal worker, pattern maker, heat-treatment, electric and gas welding, leather finishing, fruit and vegetable preservation, electroplating, etc. These courses are for 3 to 6 months' duration. These courses are offered at different extension centres of the organization.

Central Footwear Training Centre at Madras and Agra runs a 18 month course in advanced footwear technology. Operator courses are also available in various processes of footwear. During the training period stipends are paid.

The extension centre conducts a two year course in the manufacture of clinical and industries thermometers and one year course in manufacture of scientific glass apparatus. Stipends are paid during the training period.

CHAPTER 32

CONCESSIONS AND PRIORITIES ADMISSIBLE TO EX-DEFENCE PERSONNEL

As stated by Directorate General of Resettlement, Ministry of Defence, some 60,000 service personnel are released from the Armed Forces at a comparatively early age. By virtue of training imparted to these people they are the most disciplined lot and are physically fit and mentally alert. It will be impertinent if these people, who devoted their early young life to the service of the nation, lived an isolated life away from their families, away from society in the most rugged terrains, chilly climate, are not offered opportunities to resettle in civil life. Being in the active service of the Armed Forces, they are not eligible for civil employment on the basis of required educational qualifications, training, experience and age. To make their resettlement possible in civilian life, they are offered certain concessions, priorities and reservation in employment by the Central Government, State Governments, Central and State public sector undertakings, autonomous bodies, local bodies and voluntary organisations getting grants from the Government. Certain facilities are also made available to these people to start their own business or industry.

A brief account of all these concessions, priorities and reservations is given below:

Who is an Ex-Serviceman. A person who served in any rank—combatant or otherwise in the Armed Forces including Armed Forces of former Indian states but excluding Assam Rifles, Defence Security Corps, General Reserve Engineering Force, Lok Sahayak Sena and Territorial Army for not less than six months after attestation and

(1) has been released otherwise than at his own request/dismissal/discharge on account of misconduct/inefficiency or transferred to reserve pending such release,

(2) released at his own request after completing 5 years service.

Who is disabled Ex-Serviceman—A person who while serving in Armed Forces was disabled in operations against enemy or in disturbed area.

From 1st April 1982 all reserved vacancies for ex-servicemen are to be filled by candidates nominated by Directorate General of

Resettlement/ Rajya Sainik Boards/Zila Sainik Boards and Employment Exchanges are not responsible for it. Ex-Servicemen are to be registered with the respective offices mentioned above and their duplicate registration cards will be sent to the nearest Employment Exchange. However, Employment Exchanges will register Ex Servicemen as if they are general candidates and treated likewise for submitting them to employers.

Employers will have to notify vacancies to the Employment Exchange and simultaneously endorse a copy to the concerned Rajya Sainik Board/Zila Sainik Board or DGR for nominating ex-servicemen.

However, vacancies earmarked for priority ex-servicemen shall continue to be filled in from among disabled ex-servicemen, their dependents nominated by the Ex-Servicemen cell of the Ministry of Labour, New Delhi. Ex-BSF personnel killed in action or disabled and their dependents are eligible for this facility.

Concessions Allowed to Ex-Servicemen

Ex-Servicemen are preferred to others to fill vacancies in Police Force, Home Guards, Watch and Ward, Railway Protection Force and other services requiring use of arms.

For appointments in Groups 'C' and 'D' vacancies against reserved and unreserved age is relaxed to the extent of service rendered plus three years to be added to the maximum age prescribed for civilian applicants. Central and State Governments have agreed to granting general relaxation of upper age limit upto 45 years and reservation of 5 seats in Industrial Training Institutes.

Under the 'On the Job Training Scheme' of DGR serving personnel in the last year of their service sent to Ordnance factories and public sector undertakings for 9 months intensive training in specific trades and after completing the trade awarded a certificate by National Council of Vocational Trades. These trainees get a chance of absorption in the factory after retirement from Armed Forces against reserved vacancies.

Disabled Ex-Servicemen are provided free training in ITI and are paid stipend also.

For appointment to Group 'D' posts ex-servicemen having 3 years service in the Armed Forces are exempted from minimum educational qualification. For appointment to Group 'C' posts for which minimum educational qualification is Middle School pass or any lower examination the appointing authority can relax it at its discretion.

Where B.A. qualification is prescribed, such a qualification may not be insisted upon in respect of commissioned officers who have

passed out of Indian Defence Academy, Pune or Indian Military Academy, Dehra Dun. Jawaharlal Nehru University took a decision to recognise their qualification equivalent to a university Degree, subject to minimum service of 5 years with satisfactory military record.

Where appointment is done partly by direct recruitment and partly by promotion/transfer, qualifications for direct recruitment are higher than the promotees in group 'C' posts. Ex-servicemen in such cases can be appointed provided they satisfy qualifications prescribed for the post from which promotion is given.

In Nationalised Banks for clerical posts qualifications are graduation, second class Higher Secondary and first class SCC. For ex-servicemen it will be third division in Higher Secondary and second division in SSC. Also service examination of Armed Forces declared to equivalent civil SSC, only pass in the service examination is eligible qualification.

Ex-servicemen are exempt from paying application and examination fees. Expenses incurred on journey to attend an interview/test by the ex-servicemen in respect of group 'C' and 'D' posts are reimbursed to them.

Facilities Provided to Disabled Ex-Servicemen

For appointments to reserved/unreserved posts in Group 'C' and 'D' ex-servicemen disabled during war or in peace time (disability attributable to military service) who are not beyond 45 years of age are given priority first. They are not to be refused employment when sponsored by Rajya/Zilla Sainik Board. Disabled ex-servicemen not possessing required educational qualifications are considered eligible for appointment in Group 'C' posts. In Group 'D' for appointment on posts of peons, jamadars, daftries and record sorters, the Middle school standard is relaxed provided disabled ex-serviceman has put in 3 years service before being rendered invalid.

Posts reserved for ex-servicemen and priority categories are to be first referred to Ex-servicemen Cell, Delhi, before filling them up from other sources. If no candidates are available from disabled ex-servicemen the cell will issue a Non-Availability Certificate to that effect. Cases of disabled ex-servicemen not coming upto the mark are to be referred to a committee for a decision.

Any increase in the reservation of vacancies for ex-servicemen, the additional vacancies shall be utilised for appointment of disabled ex-servicemen. Age for appointment of ex-servicemen will be 45 years or the period of service rendered plus three years whichever is advantageous to them.

Educationally qualified disabled ex-servicemen are eligible to appear for competitive examinations of all Commissions/Boards with

relaxed age by 3 years. Their chances for appearing in such examinations would be the same as applicable to general candidates. Certificate of age issued by DGR is a documentary proof

Disabled ex-servicemen educationally not qualified as prescribed by various employers including Life Insurance Corporation are also eligible for appointment in group 'C' posts in which case percentage prescribed is not insisted upon.

A number of State Governments have also accorded employment concessions to disabled ex-servicemen and dependents of deceased service personnel and of those killed or disabled in action on similar lines of Central Government

Concessions Available to Dependents

Dependents of Defence Service Personnel killed in action or disabled during war or peace time (disability attributable to military service) or die in harness are entitled for the following concessions provided they fulfil age and educational qualifications

(1) Two dependents are accorded priority II. However, no priority to dependents of those who die in harness in whose case responsibility devolves on parent corps Personnel Directorate in the service concerned. These dependents have to register with Ex-Servicemen cell of the DGE & T or DGR

(2) Two dependents of service personnel killed in operations against enemy or in disturbed areas and one dependent each of those who die in harness or are medically boarded out and are unfit for civil employment can be appointed without reservation at Rajya/Zilla Sainik Board to group 'C' and 'D' posts filled by direct recruitment

For purposes of these concessions the members of families of such deceased Defence Service/BSF personnel include wife, son/daughter near relative who agrees to support the family

Recognition of Service Certificates of Education

Educational certificates awarded in the service have been recognised as equivalent to certain civil examination certificates as indicated below:

<i>Service Examination</i>	<i>Civil Equivalent</i>	<i>States</i>
Indian Army Special Certificate of Education.	X	C.G. AP, Hr, Karnataka, Kerala, MP, Tripura, TN.

<i>Service Examination</i>	<i>Civil Equivalent</i>	<i>State</i>
Army Class I Certificate of Education.	VIII	CG, AP, Assam, Gujarat, Haryana, HP, Karnataka, MP, Maharashtra, Nagaland, Punjab, Rajasthan, TN, Tripura, UP, WB, All Union Territories.
	IX	J and K.
	X	Kerala
Army Class II Certificate.	VI	Assam, Gujarat, H.P., Karnataka, MP, Maharashtra, Nagaland, Punjab, Rajasthan, Tripura, UP, W.B., All UT's and CG.
	VII	AP, Haryana, J & K, Kerala, TN.
Army Class III Certificate.	VI	AP, TN.
	IV	CG, Assam, Gujarat, Haryana, HP, J & K, Kerala, MP, Maharashtra, Nagaland, Punjab, Rajasthan, Tripura, UP, WB and all UT's.

Higher Education Test (Indian Navy) is equivalent to SSC.

Boys' Training establishment (Indian Navy) passing out Exam is equivalent to Higher Secondary.

Sailors' Training Establishment (Indian Navy) is equivalent to Higher Secondary.

IAF Education Test (Indian Air Force) is equivalent to Higher Secondary.

Reservation of Vacancies

The following is the position about reservation for appointments under different States.

<i>Govts.</i>	<i>Percentage of Reservation</i>
Central Government UT's	10% in Group 'C' and 20% in Group 'D' posts.
AP	2% non-technical, 6% medical, 32% Engineering posts of Class I and II. 2% of posts in clerical cadre of Group 'C' and 'D' posts.
Assam	2% clerical in group 'C' and 'D' posts.
Gujarat	10% in Group 'C', and 20% in Group 'D'.
Haryana	5% in Group 'A' and 'B' 17% in Group 'C' and 'D'.

<i>Govt.</i>	<i>Percentage Reservation</i>
H.P.	15% in Group 'A', 15% in Group 'A', 'B', 'C', 'D' (non-technical)
J & K	5% in Group 'C', 10% in Group 'D'
Karnataka	10% in Group 'A', 'B' 'C' 'D'
M.P.	9% in Group 'C', 14% in Group 'D'. 50% in Group 'A' and 'B' Permanent posts in Public Health, Public Works and Education Department for emergency and short service commissioned officers.
Maharashtra	15% in Group 'C', 5% in Group 'D', 2% posts of Asstt Commandants.
Punjab	15% in Group 'C' and 'A' and PCS belonging to Group 'A' and 'B'
Rajasthan	12½% in Group 'C', 15% in Group 'D', 60% Armed constabulary.
Uttarakhand	15% in Group 'C' and 'D'
TN	10% in Group 'D'
Tripura	20% in Group 'C' and 'D'
UP	8% in Group 'A' 'B' only for emergency commissioned officers and disabled Ex-servicemen 3% in Group 'C' and 'D'
WB	10% in Group 'A', 15% in Group 'B', 14% in Group 'C' 20% in Group 'D'
Central Public Sector Undertakings	14½% in Group 'C' and 24½% in Group 'D' for servicemen, disabled ex-servicemen and their dependents
State Government Public Sector Undertakings	No definite policy

Pension of Ex-servicemen on Re-employment in Civil Posts

Ex-servicemen retiring before attaining the age of 55 years get full pension as serving officers up to Rs 250/- and personnel below commissioned officers' rank get full pension in addition to salaries in the post re-employed. If employed by private sector employer all of them get entire pension.

Equation of Service Trades and Courses with Civil Trades and Courses has been prepared which may be referred to.

For speedy placement of ex-servicemen, DGR have identified service equivalents of civil trades.

Self-Employment

Directorate of self-employment under DGR provides consultancy and guidance in establishment of small scale and cottage industries, preparation of project report, allotment of industrial plots/sheds, credit facilities and marketing opportunities, agro-based industries like— dairy farming, poultry, piggery, fishery, etc., allots tractors, assists in obtaining military surplus land, agencies of agricultural outputs such as seeds, fertilizers and pesticides. It also helps in formulation of transportation projects, procurement of vehicles/chassis and allotment of surplus vehicles of Army disposal stock, agencies/dealership of selected public and private sector undertakings.

Nationalised Banks offer loan facilities to retired Defence Service Personnel to settle in villages. Army widows and disabled ex-servicemen get special consideration. Loans are also given to acquire buses, goods carriers, taxis, station wagons, autorickshaws, cycle rickshaws, handcarts, camel carts, animal driven carts, second hand discarded ordnance vehicles, retail shops, cloth and garment shops, ration shops, cooking gas agencies, etc.

CHAPTER 33

FACILITIES, CONCESSIONS AND RESERVATIONS FOR SCHEDULED CASTES/TRIBES CANDIDATES

Transformation of a society basically caste-ridden into its wholesome attitude towards other persons as equal in social behaviour obviously is a slow process especially where traditions and superstitions enjoyed unopposed power. The advent of Britishers and introduction of English and Science education by them has created Indian Renaissance by virtue of which even common people began to utter words like freedom and liberty. Britishers, though aliens and rulers, must therefore be thanked for this transformation of society because it helped eradication of social stiffness and allowed us to pave our way towards emancipation of those who suffered quite a lot—mental, social and physical tortures at the behest of caste Hindus. As said earlier the process is slow.

After Independence, India naturally had to face gigantic and nagging problems of setting things right disturbed under the foreign rule. Among such significant problems, emancipation of scheduled castes/tribes was also to be considered and hence certain steps were taken to safeguard interests of these people by giving them facilities, concessions and reservations in public employment. As it happens, in the rush of things we may not achieve success in full measure which forces us to await for some time. 40 years in the life of a nation after it achieved freedom is considered to be enough period had it been the case of inheriting complete infrastructure on which to erect the developmental structure. Here we missed this. We had to make a start with creating infrastructure and developmental activities simultaneously which apparently was time consuming. Though late we came unscathed through this traumatic time and ordeal task. However, we were not able to pay sufficient attention to the uplift of scheduled caste, tribes and hence, facilities, concessions and reservations that were made available to these people are decided to be continued for some more years in future.

Many people belonging to this group are not fully aware about them which comes in the way of social integration of these people. It would be the nicest affair to remove the caste-stigma on the society. It is not a matter of honour and these people do not feel so to be called as they are being called. The need of the hour is that the scheduled caste/tribe people should take the maximum benefit of the concessions and the remaining people allow that to do so uninterruptedly. It is quite clear that such things are to live short, cannot continue permanently. People from both sides should have to understand the basics behind this and accelerate the process of integration of

the society. We have to view the facilities etc. offered to the SC/ST candidates through this angle.

Information here is restricted to educational, training and employment facilities only.

(I) Educational Facilities. Objectives of these facilities are to reserve seats in educational institutions, pursue studies, provide incentives to parents to send their wards to schools and provide scholarships to attract students towards higher studies with an ultimate objective of helping them to advance and catch-up with general population for early social integration. There are two distinct areas for providing these facilities, i.e. (i) up to secondary school final stage, and (ii) after it.

(1) Upto Secondary School Stage. Responsibility of education of this stage is that of State Govts. under which reservations in admission, provision of scholarships, stipends and hostel facilities are provided. Alongwith provision of books or book grants, educational equipments, midday meals and uniforms are provided. These benefits are available even for one failure but then they are not available

Reservation in admission in public schools is 20%. Some schools provide freeships to these students. Reservation in Sainik schools exists irrespective of position in merit list. Those who fail for want of seven marks even in two subjects out of four of the admission test are also admitted provided they pass in aggregate. Reservation of 15% for SC and 7.5% to ST in Central Schools is also available. Those who fail the admission test even with relaxed standard are also admitted in the lower class with the consent of parents. Prizes for meritorious students and special coaching is also provided. Rates of scholarships and stipends and extent of other facilities differ from state to state. In hostels free lodging and boarding is provided. Assistance to private and voluntary bodies who run hostels is provided. In general hostels, some seats are reserved for them.

(2) After Second School Examination. Education after secondary school education is the responsibility of the Central Government. SC/ST candidates are provided facilities like reservation and relaxation at the time of admission, post SSC scholarships, college hostels, merit scholarships, national overseas scholarships and book banks. Reservation of 15% to SC and 5% for ST is available with a provision of exchange of seats between SC and ST candidates where sufficient number of candidates from either of two are not forthcoming. Relaxation of 5% marks prescribed for admission and 3 years relaxation in age are given to these candidates. 20% seats in medical colleges are reserved for them. In Armed Forces Medical College candidates belonging to these categories figuring in first 500 candidates selected as per merit in entrance examination are admitted. About 220 seats are available for them in Indian Institutes of

Technology located at Bombay, Madras, Calcutta, Delhi and Kanpur. However, they will have to obtain $\frac{2}{3}$ marks obtained by a general candidate last admitted. In case, there is still a shortfall applications are invited from those who have secured 50% marks in the qualifying examination.

At post-graduate level 5% seats are reserved for these candidates. The same case is with the Industrial Training Institutes where seats are reserved for these people in proportion to their population in that State. In some states special ITI's have been opened for these candidates.

Post SSC Scholarships. These scholarships are available to those candidates whose parent's monthly income does not exceed Rs. 1000/- No more than two children of the same parents can avail of this scholarship. For XI and XII classes it is Rs. 50 - pm and Rs. 55/- pm respectively, first year of college of general education it is 70/- pm, second year it is Rs. 80 - pm. At post-graduate level in Arts and Commerce it is Rs. 100 - for first year and Rs. 105 - pm for second and subsequent years respectively. Students in medical and engineering colleges get Rs. 100 - pm.

These students also get fees like registration, tuition, library, games, union magazine medical examination. An amount of Rs. 100 - pm is also given towards the expenses of study tours. An equal amount is also given to research-scholars for typing/printing of thesis. 20% seats in general hostels are reserved for them in addition to special hostels for them.

$7\frac{1}{2}$ % merit scholarships awarded by Govt. of India, Ministry of Education are reserved for SC/ST candidates. National Overseas Scholarships are awarded to these people to take up post-graduate courses in foreign countries for which suitable facilities are not available in India especially in Engineering, Medicine, Technology and Science.

(II) **Training Facilities.** Training is of two types pre-service and in service. SC/ST candidates in order to be trained and gainfully employed, have been extended facilities of training in some of the training schemes mentioned below.

(1) *Craftsman Training Scheme.* Students admitted in Industrial Training Institutes are paid a stipend of Rs. 60 - for day scholars and Rs. 100/- pm for hostellers; however, parent's income should not exceed Rs. 750 - pm.

(2) *Apprenticeship Training Scheme.* There is a provision of reservation of seats under this scheme. Other conditions are the same as applicable to the candidates of general category.

(3) *Pre-Examination Training Scheme.* To help these candidates prepare well to compete for competitive examinations conducted by

UPSC or State Public Service Commissions they are admitted in All-India service Pre-Examination centres through a qualifying test.

Expenditure involved is borne by the Govt. There are 11 such centres at All-India level and 26 at the State level. Two additional centres are for Engineering Service Examinations.

(4) *Coaching-cum-Guidance Centres.* Directorate General of Employment and Training, Ministry of Labour, New Delhi is running this scheme.

Under this scheme some coaching-cum-guidance centres have been established at important cities to give guidance to SC/ST candidates who, for want of proper guidance, are not able to secure suitable employment. Information on educational courses, training courses and employment opportunities is provided so as to enable them to become employable.

At Delhi a special scheme is run for coaching these candidates in stenography to enable them to take competitive examination in stenography or typing. These candidates are admitted in the course of 11 months' duration. They get Rs. 75/- p.m. as stipend and are imparted instruction in General English, General Knowledge, Shorthand and typing.

(5) *Training in Methods of Cooperation.* Where cooperative societies have been formed by these people they are trained in methods of cooperation, thus they are prepared to assume responsibility as office bearers of these societies.

(6) *Special Craft Training Centres for SC/ST Women.* Women belonging to these categories do not come forward to take up jobs in craft, art, teaching and nursing. Some states have taken various measures to meet these specific needs. All the material required is provided free. After completion of training they are also provided machines free of cost.

(7) *Data Bank for SC/ST Candidates of Fertilizer Corporation of India.* In a special cell opened in FCI candidates belonging to SC/ST categories are registered for employment. Registration, of course, does not give guarantee of employment. Degree/Diploma holders in engineering, ITI and NCVI trade test passed, graduates in commerce and post-graduates in commerce and other administrative disciplines are registered in the cell.

(III) **Reservation and Concessions in Employment.** Under the directive principle State promotes educational and economic interests of weaker sections and shall protect them from social injustice and all forms of exploitation. Central and State Governments have taken several measures to ensure merger of SC/ST people in national life. Reservation in public employment is one.

Reservation through direct recruitment on All-India basis is 15% for SC and 7½% for ST respectively. For recruitment to Group 'C' and 'D' posts where it is done from amongst local candidates, it is proportionate to population of SC/ST in the respective states. Vacancies are advertised twice - first exclusively for SC/ST and if no adequate response is there second time open to all but general candidates are considered if SC/ST candidates are not available. Wide publicity is given to vacancies reserved for SC/ST through All-India Radio and contacting SC/ST associations.

Reservation is also applicable to promotional posts where they are elected by seniority in all grades and in all groups, limited departmental exams for group 'B', 'C' 'D' and promotion by selection upto lowest rung of group 'A'. Reservations are open to each grade or post separately but isolated posts are grouped. Exchange of vacancies reserved for SC/ST separately can be allowed. Reservation is not applicable to posts filled by transfer or on deputation and temporary upto 45 days. Where substantial posts are to be filled by deputation employing authorities should ensure adequate proportion filled by SC/ST candidates. Scientific and Technical posts are out of the purview of reserved quota.

Age is relaxed by five years, fees reduced to 1/4 and relaxation of experience qualification are also available to these candidates. Candidates are to be interviewed separately on their days. Candidates called for interview by UPSC are paid single second class rail fare by shortest route. In other cases the same is paid provided distance travelled each way exceeds 80 kms or actual bus fare provided distance travelled each way exceeds 32 kms. When local employment exchange is unable to provide candidates, vacancies are referred to Central Employment Exchange at New Delhi which advertises them in the Employment News. Deputy Secretary in each ministry acts as a Liaison Officer in respect of matters relating to representation of SC/ST.

Teaching vacancies (lecturer) in Universities and colleges are filled by determining reserved quota and interviewing candidates of SC/ST separately. If these candidates are not found suitable for such posts they may be appointed as Research Associates for 2-3 years and later can be considered.

Bureau of Public Enterprises has issued directives to all public sector undertakings to make reservation for SC/ST in their Service. Autonomous bodies, voluntary agencies who receive grants from the Government have to provide reservation to SC/ST candidates on the lines of Central Government. State Bank of India, Reserve Bank of India and Nationalised Banks also reserve vacancies for these people.

(IV) Self-Employment Opportunities—Self-employment means getting oneself engaged in a gainful activity. Government of India

have issued instructions to Nationalised Banks, State Govts and Farmers' Development Bodies, Industrial Development Bodies to promote self-employment among SC/ST people by providing technical guidance, soft loan facilities in addition to other types of guidance. No tangible security is insisted upon. Low rate of interest i.e. 4% is to be charged. Loans are advanced by banks for retail trade, agricultural activities, cycle rickshaws, autorickshaws, tailoring, hair cutting, blacksmithy, shoemaking, small industries, fishing boats, purchase of cattle, knitting machines, etc. Doctors, engineers, lawyers, accountants, architects are helped to purchase equipments.

Development Corporations for SC/ST have been set up to assist SC/ST people to assist them for transport business, industry, agriculture, workshops, setting up of ancillary units. Fair price shops, ration shops, kerosene oil depots, cement depots, coal and gas depots are allotted to these people on preferential basis.

Small Industries Development Corporation gives credit facilities on lower rate of interest, grace period for commencement of repayment of loans, reduction in service charges and margin of security, 15% subsidy, free services of reputed experts under Integrated Rural Development Programmes. 30% families are selected from these people and subsidy of Rs.3000 - for SC and Rs. 5000 - for ST is also offered.

Under Training for Rural Youth for self-employment, these people are trained by a master craftsman. Each trainee gets Rs. 75/- p.m. if he is local and others get Rs. 200 - p.m. if no accommodation is provided. Rs. 50/- p.m. are given to master craftsman institution per trainee per month. Rs. 25 - per month per trainee are given for raw material subject to maximum of Rs. 200 - per trainee. A tool kit costing not more than Rs. 500/- is provided to each trainee.

CHAPTER 34

EMPLOYMENT AND MANPOWER PLANNING IN THE SEVENTH FIVE YEAR PLAN

Progressive reduction of unemployment has been one of the principal objectives of economic planning in India. The growth of economy not only increases production but also provides capacity for absorbing the backlog of unemployed, underemployed and substantial proportion of additions to the labour force. The solution to the problem of employment and poverty is through high rate of economic growth. Adoption of suitable structure of investment and production appropriate types of technology and organizational support help promote growth of productive employment. Technological upgradation, modernization and scientific advances in production process constitute the essence of growth of productivity. There must therefore, be suitable arrangements and adjustment policies in terms of education, training, retraining and re-orientation of workers to avoid the fear of getting thrown out of employment.

In preparing an employment policy, a role has to be given to the growth of agriculture. A constant growth of agricultural production through expansion of irrigation, increases in cropping intensity and extension of agricultural technologies will create a large number of employment. However, agriculture by itself alone cannot eliminate the backlog of the unemployed, leave aside the case of additions to the labour force. Efforts in agriculture, therefore, should be concerted with efforts in industrial growth and rural development. It is imperative to combine wage-paid employment with creation of conditions for additional self-employment. The problem of educated unemployed raises a special issue because of the scarce resources have gone to educate them. This is to be handled through proper educational planning, scheme of training, skill formation and entrepreneurial development.

Labour Force and Employment The sixth plan envisaged addition to the labour force of the order of 34 million in the age group 5+ by 1985. This together with a backlog of 12 million formed a problem for creation of job opportunities. The estimates of labour force of usual status etc., of the age group of 5+ by the year 1990 would be about 344.78 million as against 305.40 million

by March 1985. The estimates of unemployment of usual status of the same age-group by the same year is 9.20 million which is the backlog for the seventh plan. The net addition in the labour force of 39.38 million and the backlog of unemployed of 9.20 million if added together comes to 48.58 million for whom employment opportunities are to be generated during the seventh plan period.

It has estimated that employment was to grow from 151.11 million standard person years in 1985 to 185.38 in 1990 which indicates an increase of 34.28 million standard person years. But in actual employment in 1985 would have been 186.70 million standard person years bringing the increase to 35.60 million standard person years.

In addition to the sectoral investments that have resulted into generation of employment opportunities, there have been in operation important employment/self-employment oriented programmes for specific target groups of people. Their achievement is as follows:

(1) National Rural Employment Programme. It aims at generating employment opportunities in the rural areas and simultaneously creating durable community assets for strengthening the rural infrastructure. The achievement in the programme was generation of 349.90 million man days by 1985.

(2) Rural Landless Employment Guarantee Programme. The objective of the programme was to improve and expand employment opportunities for rural landless to provide guarantee of employment to at least one member of the family upto 100 days in a year as also creating durable assets for strengthening rural infrastructure. Under the scheme 260.15 million man days of employment were generated during the 6th Five Year Plan.

(3) The Integrated Rural Employment Programme. It is the single largest scheme for providing direct assistance to the rural poor to attain higher income and better standard of living. It was estimated to cover 15 million families, the target being 3000 families per block.

(4) Training Rural Youth for Self-Employment. The principal objective of the scheme was to remove unemployment among the rural youth. The target was to train 2 lakh rural youth every year at a rate of 40 youth per block to equip them with skills to enable them to become self-employed. A rural youth with family income of Rs 3500/- per year was eligible preference being given to those who had appropriate aptitude for innovation and entrepreneurial activities. Priority was allotted to scheduled castes, scheduled tribes and women. The mode of training is institutional as well as under master craftsman. Out of 9.4 lakh trained youth under the scheme 50 percent of them had taken up self-employment.

(5) Scheme for Providing Self-Employment to Educated Unemployed Youth Under the scheme a grant of loan upto Rs. 25000 was to be given to the youth residing in areas other than cities with a population of 10 lakh or having no other source of finance to settle down in self-employment. An outright subsidy of 25 percent of the loan was given to these youths.

Projected Growth of Employment: 1984-85—1989-90

Sl. No.	Sector	Employment in Million Standard Person Years		Increase
		1984-85	1989-90	
1.	Agriculture	96.108	113.092	17.984
2.	Mining & Quarrying	1.153	1.494	0.341
3.	Manufacturing	10.427	12.624	2.197
4.	Construction	10.427	12.624	2.197
5.	Electricity	1.031	1.498	0.467
6.	Railways	1.544	1.588	0.144
7.	Other Transport	9.440	11.810	2.370
8.	Communication	0.911	1.224	0.273
9.	Other Services	39.261	49.165	9.904
Total		181.765	227.061	40.356

With the expansion of green revolution there is an increasing demand for immigration of labour in the peak operational seasons. Additional employment was created during these seasons. The migration of labour from less prosperous areas to more prosperous ones should be fostered with a cautious approach to mechanisation.

Employment Potential of Sectorial Programmes The employment potential of sectorial investment would be as under:

(1) Substantial employment would be generated through development and maximum utilization of irrigation potential; propagation of available technology; special programmes for increasing production of rice, coarse grains, pulses and oil seeds; improvement of cultivable wasteland; horticultural development in hill and tribal areas; acceleration of animal husbandry and dairy farming programmes; fisheries programmes for tapping vast production potential; developmental activities of afforestation.

(2) Focus on industrial development will be on upgradation of technology, modernization equipments, better utilization of assets and promotion of efficiency. Emphasis will be on adequate growth of sectors like fertilizers, pesticides and essential agricultural machinery as also on sizeable increases in production of wage goods and essentials of mass consumption like sugar, vegetables, oils, drugs, textiles and paper and commonly used consumer goods. This will

lead to creation of considerable employment opportunities in small scale industry. A major thrust will be on sun-rise industries like electronics, automobiles. Development of these industries would provide substantial employment opportunities in the ancillary and service sector.

(3) In view of the limited potential of the organised industrial sector to absorb increases in the labour force, small-scale industries and the rural non-farm sector have an important role to play in generating additional employment. If the traditional skills are upgraded the rural industrial sub-sector would provide more permanent avenues of employment. For example, handloom industry is the largest single cottage industry which employed roughly 74 lakh persons in 1984-85 and is likely to provide 24 lakh more persons employment by the year 1990.

(4) Irrigation and flood control, canals dam construction, minor irrigation, embankment and anti-erosion works have a potential of generating more employment opportunities.

(5) Housing is highly employment oriented activity. Its step-up will provide employment to a large number of urban and rural people.

(6) In the sub-sector of transport in the rural areas, there is a scope of employment opportunities in construction of rural roads, inland water transport, road transport, ship building and repairing etc.

Manpower Planning. Many young people plunge into occupations without much consideration of their natural possessions, environments and contexts they breathe in under certain forceful conditions and impulses. It has ubiquitously been proved that hidden in the deep of our being is a rubbish heap as well as a treasure trove. Man should undertake to discover this treasure trove, take its care and nip the rubbish heap in the bud. Man struggles hard and continuously on many fronts through his numerous activities which are truly different work aspects. Such struggles emerge prominently through occupations. Occupations wrongly selected and accepted would nourish the rubbish heap, will allow to get better of the treasure trove. But occupations of choice will make the treasure trove glitter and flourish.

So long as people breathe fresh air of the Earth, they are under obligation to render grateful service. Such grateful service is understandably possible through a proper and suitable occupation. Wrong occupations produce reluctance and detest. Suitable occupations nurture satisfaction. People glimpse reality of bliss in suitable occupations, their faces shine with a liberating glow. In the job of one's choice people have ample fund of accommodation, patience and forbearance.

The Seventh Plan lays emphasis on harnessing the country's abundant human resources for improving their capabilities for development. An important aspect of human resources development relates to development of manpower needed for fulfilment of targets of growth of different sectors of economy. The objectives of manpower planning are to ensure proper linkages of economic planning with manpower and educational planning so that no plan programme suffers from lack of trained manpower that is needed. To make use of every available hand, it entails on the national planners to conserve this human resources judiciously. That is the aim of the Seventh Plan.

It is our common experience that if water is allowed to meet the seas, of what use is that water to us. Hence, with planned efforts we try to conserve this water through the efforts of dams so that it can be used for irrigation and generating power. The same analogy applies to human resources too. Therefore, conservation of human resources attains a significant role to play in the nation's progress.

Occupations are many, so people are. The efforts in matching these two means conservation of human resources. We have already worked out the estimates of available hands for work. These hands are to be equitably distributed amongst different industries. Blind allocation of people to different industries without bothering to the requirements of industries and without taking cognizance of natural tendencies of people, we cannot achieve the desired goal. We do require different manpower such as scientists, social workers, teachers, engineers, medical personnel to satisfy the varied needs of the society. How many of them would be required in future can be worked out easily and then plans to train additional hands prepared.

While training additional hands due respect should necessarily be paid to the person's assets and liabilities so that the person will land into the occupation of his choice where in he can put in maximum of his efforts to bring out qualitative and quantitative output.

The efforts of manpower planning will save the society from dangers of turning young people anti-social for want of proper outlets for expression of their potential, remove caste and sectorial considerations, make it possible employment of hard to employ through retraining. That is the effort of grooming the nation's manpower wealth for accepting challenges thrown by the modern occupations.

A considerable expansion in the job opportunities for educated manpower may be expected in the Seventh Plan due to technical advancement and expansion of activities. While job opportunities for X class or 10+2 pass candidates and engineering diploma holders will emanate from the organised sectors, those for higher categories would be generated primarily in industries, banking, transport, communication and public service.

In recent years, technical education has undergone a significant improvement and its scope has been enlarged by adding new fields.

Special attention has to be given to areas like electronics, computer system, nuclear science, satellite communications, environment engineering and non-conventional energy sources development and technology. Emphasis will have to be laid on research and development to accelerate and maintain the tempo of growth of technology. A close coordination between educational training institutions and industrial establishments is necessary and teaching programmes may be arranged on exchange basis to keep the faculty informed of the latest needs of industries.

Manpower planning in the field of electronics would deserve special attention in view of tremendous growth of the industry in recent years and even a faster growth envisaged during the Seventh Plan. Emerging areas of electronics industry would be basic technology, power semi-conductor devices and equipments, electro-optics, real-time system and communication, and defence electronics and communication wherein there is a possibility of shortage of manpower during the Seventh Plan period. Measures like strengthening of institutions, universities and other training centres engaged in imparting instructions in advanced technologies in electronics, aligning on-the-job training facilities, setting up of advanced training centres, upgrading of existing telecommunication training centres, emphasis on methods of training oriented towards conversion of laboratory know-how to production-oriented know-how have to be given top priority.

Manpower requirements of energy sector are varied. There is a need for development of manpower to design, create, operate and maintain super thermal power projects. The initial training of personnel must be supplemented by post-employment training to upgrade their skills. The same case holds good to ocean wealth.

While designing to mould the manpower to suit the industrial requirements it is essential to pay special attention to the people of backward and hill areas to bring them up on par with the other people through special training.

Manpower so trained will have a sufficient motivation to accept challenges and forge ahead no matter what odds they have to face. That is the success of human resources development.

CHAPTER 35

IMPORTANT SUBJECTS AND INSTITUTIONS

We give below a list of some important subjects and institutions which offer instructions in those subjects. These are excluding the institutions which have appeared elsewhere in this book. Candidates are requested to contact them personally or through correspondence to get up-to-date and relevant information. These institutions have books, magazines and libraries which give a fund of information

(1) Accountancy

(a) Institute of Chartered Accountants of India, Mathura Road, P.B. 268, New Delhi-110001

(b) Institute of Chartered Accountants of India, Western Region, 27 Cuffe Parade, Kolaba, Bombay-400005

(c) Institute of Chartered Accountants of India, Pune Branch, S.P. College Campus, Pune 411030

(d) Institute of Costs and Works Accountants of India (Western Region) Opposite Freelsior Theatre, Bombay-400001

(e) Company Law Board (Govt. of India), A Wing, 5th floor, Shastri Bhavan, Dr. Rajendra Prasad Road, New Delhi-110001

(f) Cooperative and Accountancy Diploma Board, Pune-411001.

(2) Acturial Science

Acturial Society of India, C/o Life Insurance Corporation of India, Yogkshema, Madam Cama Road Bombay-400001

(3) Advertising

(a) Indian Society of Advertisers, Army Navy Building, M.G. Road, Bombay-400001

(b) Bombay Advertising Society, Commerce House, Medow's Road, Bombay-400001

(c) Advertising Agencies Association of India, III-A, M.G. Road, Opposite Rajabhai Tower, Bombay-400001.

(4) Anthropology

Anthropology Society of India, 136, Appollo Street, Bombay-400001

(5) Architecture

The Indian Institute of Architects, Prospect Chambers Annexe, D.N. Road, Fort, Bombay-400001

(6) Art

(1) Bombay Art Society, Jehangir Gallery, M.G. Road, Bombay-400001

(b) Commercial Artists Guild, India House, Fort, Bombay-400001.

(7) Chemists/Druggists

(a) Chemists and Druggists Associations, Block No. 3, Devkaran Mansion, Princess Street, Bombay-400002

(b) Indian Chemical Society (Bombay Branch), Institute of Science, Mayo Road, Bombay-400001

(c) Society of Biological Chemists, C/o Indian Institute of Science, Bangalore-560012.

(d) Institute of Chemists (India), Chemical Department, Medical College, Calcutta-700012

(e) Indian Chemical Society, 92, Acharya Prafulla Chandra Road, Calcutta-700009

(8) Cinematography

(a) Indian Motion Picture Producers' Association, Sandhurst Building, Opera House, Bombay-400004

(b) Indian Motion Picture Distributors' Association, Mughal Lane, Mahim, Bombay-400016.

(9) Commerce/Industries

(a) Bombay Chamber of Commerce Industries, Hackinon, McKenzie Building, Ballard Estate, Bombay-400001

(b) Maharashtra Chambers of Commerce and Industries, 12, Rampart Road, Bombay-400001

(c) Indian Merchants Chambers, 76, Veer Nariman Road, Church Gate, Bombay-400001

(d) Maratha Chambers of Commerce & Industries, Tilak Road, Pune-411030.

(10) Engineering

(a) Electrical Contractors' Association, New Stock Exchange Building, Bombay-400001

(b) Mechanical Engineers' Association (India), Janmabhumi Chambers, 29 Fort Street, Bombay-400001

(c) Institute of Chemical Engineers (India), Jadavpur University, Calcutta-700032

(d) Institute of Engineers (India), Nagpur Centre, North Ambazari Road, Nagpur-440002

(e) Institute of Engineers (India), Maharashtra Region, Sir Ferozeshah Mehta Road, Electric House, Bombay-400001

(f) Institute of Engineers (India), Poona Centre, Shivajinagar, Pune-411005

(g) Institute of Telecommunication Engineers, P B 481, New Delhi-110001

(h) Institute of Industrial Engineers C o Voltas Ltd, Ballard Estate, Bombay-400001

(i) Institute of Production Engineers, 34 Veer Nariman Road, Bombay-400001

(j) Builders' Association of India, United Insurance Building, Sir Ferozeshah Mehta Road, Fort, Bombay-400001

(k) Institute of Electrical Engineers 1, Forbes Street Fort, Bombay-400001

(l) Institute of Structural Engineers (London), C o Concrete Association of India Cement House, Queen's Road Bombay-400001

(m) Indian Society for Technical Education, C o Indian Institute of Technology H O S Khas, New Delhi-110016

(11) Journalism

All India Newspaper Editors' Conference 50 Theatre Communication Building, Connaught Place, New Delhi-110001

(12) Geography

Bombay Geographical Association Parle College, Bombay-400057.

(13) Insurance

(a) Indian Insurance Company Association, Cooperative Insurance Building Sir Ferozeshah Mehta Road Bombay-400001

(b) Insurance Association of India Radio House, 6 Rampat Road, Bombay-400001

(14) Labour Management

(a) Indian Council of Management of Executives, P.B 1914, Bombay-400001

(b) National Institute of Labour Management, M G Textile Technical School, Parel, Bombay-400012

(15) Law

(a) Bombay Advocates' Association, C o Small Cause Court, Bombay-400002

(b) Bombay Incorporated Law Society, High Court, New Building, Bombay-400001

(16) Library Science

(a) Bombay Library Association, C/o Siddhartha College, Buddha Bhavan, Bombay-400001

(b) Director of Libraries (Maharashtra Rajya), Town Hall, Bombay-400001

(c) Maharashtra Rajya Granthalaya Sangh, Naigaon Cross Road, Dadar, Bombay-400002

(17) Medical Science

(a) Maharashtra Medical Council, Swadeshi Mill Estate, Near Roxi Cinema, Bombay-400004

(b) Indian Medical Association, Bombay Branch, Sardar Patel Road, Bombay-400004

(c) All India Dental Association, India House, 122, Cumbala Hills, Bombay-400026

(d) All India Institute of Hygiene and Public Health, Calcutta-700012

(e) Medical Council of India, Kotla Road, Temple Lane, New Delhi-110001

(18) Marketing Management

Institute of Marketing & Management, 62 F, Sujansingh Park, New Delhi-110003

(19) Mining

The Mining, Geological & Metallurgical Institute of India, 29 Chowranghee, Calcutta-700016

(20) Natural History

Bombay Natural History Society, 91 Walkeshwar Road, Bombay-400006

(21) Nursing

(a) Maharashtra Nursing Council, Gresham Insurance Building, Sir Ferozeshah Mehta Road, Bombay-400001

(b) Nursing Association, Manekji Wadia Building, M. S. Road, Bombay-400001

(22) Pass Port

Regional Pass Port & Emigration Office, Worli, Bombay-400025

(23) Personnel Management

(a) Indian Institute of Personnel Management, 15 Park Street, Calcutta-700016

(b) Indian Institute of Personnel Management (Bombay Branch), C/o Bombay Chambers of Commerce, Mackenon Mackenzie Building, Ballard Estate, Bombay-400001

(24) Pharmacy

Indian Pharmaceutical Association (Maharashtra Branch), Kalina, Santa Cruz, Bombay-400029

(25) Plastic Manufacturing

All India Plastic Manufacturers' Association, Jehangir Building, M.G. Road, Bombay-400001

(26) Printing

Bombay Presidency Printers' Association, Naraindas Building, 18, Ballard Estate, Bombay-400001

(27) Psychology

(a) Bombay Psychological Association, C/o Department of Psychology, Bombay University, Kalina, Santa Cruz (East), Bombay-400029

(b) All India Institute of Mental Health, Bangalore-560012

(c) Indian Psycho-Analytical Society, 14 Parsi Bagon Lane, Calcutta-700009

(28) Radio/Electronics

(a) All India Radio Merchants' Association, Fateh Manzil, Opera House, Bombay-400004

(b) Radio & Electronic Society, 14 New Queen's Road, Bombay-400014

(29) Public Administration

Indian Institute of Public Administration, Indraprastha Estate, Ring Road, New Delhi-110001

(30) Secretaries

Institute of Secretaries, Lentin Chambers, Dalal Street, Fort, Bombay-400001

(31) Sugar Technology

Sugar Technological Association of India, Kalyanpur, Kanpur-208018

(32) Textile Manufacture

The Textile Association of India, 72/A, Shivaji Park Road No. 1, Bombay-400026

(33) Transport

(a) India Roads and Transport Development Association, 27 Bastion Road, Bombay-400001

(b) Indian Institute of Road Transport, Best House, P.B. 192, Fort, Bombay-400001

(c) Central Institute of Road Transport, Pune-Nasik Road, Bhosari, Pune-411016

Some Usual Courses with Institutions

1. *Trade Unionism & Industrial Relations*. Post-Graduate Diploma of 9 months at the Bombay Labour Institute, Parel, Bombay-400012

2. *Public Administration*. Post Graduate Diploma of 2 years at Nagpur University, Nagpur

3. *Population Studies*. Certificate Course after Post-Graduation at International Institute of Population Studies, Deonar, Bombay

4. *Foreign Affairs*. Post-Graduate Diploma of one year at Deptt of Political Sciences, Aligarh Muslim University, Aligarh

5. *Cartography*. Post-Graduate Diploma of one year at N.M. Dalal College, Gondia

6. *Documentation Studies Associateship*. Post B. Lib. or M. Lib. Course of 2 years at Documentation Research and Training Centre, Bangalore-560001

7. *Teaching of English*. Post-Graduate Diploma at University Department of English, Nagpur University, Nagpur

8. *Statistical Maths and Applications*. Post-Graduate Course of one year (for Graduates in Maths only) at Indian Statistical Institute, 203 Barrackpore, Trunk Road, Calcutta-700032

It also offers Master of Statistics for B.A./B.Sc with Maths for two years, B. Stats for one year and for B.A./B.Sc (Maths), three years.

9. *Taxation Law*. Post-Graduate Course of one year at New Law College, Ahmednagar-414001 and Law College, Jalgaon-425091

10. *Master of Personnel Management*. Post-Graduate Course of two years (evening) at Post-Graduate Institute of Management Development & Research, Fergusson College, Pune-411004

11. *Labour Laws & Welfare*. Post-Graduate Diploma at New Law College, Ahmednagar-414001

12. *Labour Welfare and Industrial Relations*. Master's Degree Course of two years at Bombay Labour Institute, Parel, Bombay-400012

13. *Social Work*. Post-Graduate Diploma of two years at:

(1) Tirpude Institute of Social Works, Civil Lines, Nagpur-440002

(2) Karve Institute of Social Sciences, Karve Road, Pune-411007

(3) Ahmednagar College, Ahmednagar-413001

14. *Social Work*. Master's Degree Course of two years (M.Sc.) at:

(a) Institute of Social Service, 38, New Marine Lines, Bombay-400020

(b) Ahmednagar College, Ahmednagar-414001

(c) Sholapur College, Sholapur-413001

15. *Family and Child Welfare, Medical Psychiatric Social Work, Criminology and Correctional Administration, (Urban and Rural Community Development, Social Welfare Association)*. Master's degree in social work in one of the above specialised fields at the Tata Institute of Social Science, Deonar, Bombay-400028

M. Phil (Social Work, Social Sciences) of 1 year at the same Institute.

Methodology Diploma of 2 years (Part-time) at the same Institute.

16. *Social Communication*. Post-Graduate Diploma of one year at Vasant Kumar Somani Memorial Girls' Polytechnic, Sophia College, Bombay-400026

17. *Journalism*. Post-Graduate Diploma of one year at:

(a) Department of Journalism, Pune University, Pune-411004

(b) University College of Arts, Calcutta University, Calcutta-700001

(c) Department of Indian Economic Madras University, Madras-600001

(d) Hislop College, Nagpur-440002

(e) Osmania University, Hyderabad-500007

18. *Bank Administration*. Post-Graduate Diploma of one year at:

(a) M.S. University, Baroda-390001

(b) Aligarh Muslim University, Aligarh-202001

(c) Rajasthan University, Jaipur-302003

19. *Management in Agriculture*. Post-Graduate Course of one year at Indian Institute of Management, Visapur, Ahmedabad-380001 (Graduate in Agri. Science/Engg/Vet. Sc./Dairy Sc. are only eligible)

20. *Cooperation*. Post-Graduate Basic Diploma Course of 3 years and then Higher Diploma at Cooperative Training College,

Erandvana, Karve Road, Pune-411004. Govt. Diploma in Cooperation and Accountancy of 2 years at Registrar of Cooperative Societies, Maharashtra Rajya, Pune-411001.

Core course in Cooperative Business Management after graduation for one year at Vaikuntha Mehta National Institute of Cooperation Management, Pune-411007. It also conducts orientation courses for senior officers for 3½ months. Candidates must be graduates.

CHAPTER 36

CAREERS IN BIOLOGY

There is a constant struggle for life in the living universe including plants. As a natural phenomenon the process of growth, life and ultimate end continues unhindered. However, in between birth and death there are many obstacles the living world faces, some manmade and some caused by disturbed conditions in environment, climate, etc. The science of Biology studies all these phenomena. Therefore, this science is called as a systematic study of living forms.

Living universe includes plants, animals and human beings. Biology studies all forms of life as under what conditions they grow, decay and die and qualitative and quantitative changes can be brought in their life. Truly speaking this science helps us to solve some nagging problems like that of over population, a variety of diseases and scarcity of food.

The science of biology is a broader term which includes many disciplines such as Botany, Zoology and Microbiology. These disciplines in turn have many sub-disciplines such as Ecology—study of effects of atmosphere and environment on the growth of plants and animal life; Genetics—study of factors of heredity; Cytology—study of cell formations amongst plants and animals; Taxonomy—Classification and identification of a variety of plants and animals; Mycology—study of techniques of controlling fungi; Entomology—study of insects, pests which are harmful to plants; Parasitology—study of parasitic growth of protozoons, round worms, tape worms, liver flukes etc; Pisciculture—study of rearing fish; Physiology—study of normal functioning of organs and tissues of plants; Pathology—studies of diseases of plants.

Agronomy—studies how to increase food products; Forestry—maintaining, managing and protection of forests; Horticulture—study of gardens, orchards, in series with a view to grow fruits, flowers, vegetables, trees and ornamental bushes; Fishery—study of breeding, development and conservation of fish; Economical Botany—study of cultivation of plants of commercial and economic importance; Plant Breeding—Growing of improved varieties of plants in size, quality, yield and resistance; veterinary science: studies prevention and cure of animal diseases.

After the name of these sciences occupations have come into existence as Ecologist, Genetist, Cytologist, Taxonomist, Mycologist, Entomologist, Parasitologist, Pisciculturist, Physiologist, Pathologist, Agronomist, Forester, Horticulturist, Economic Botanist, Veterinarian, Plant Breeder, Wild-Life Manager, Curator, Regional Botanist, Systematic Botanist, Harbarium Keeper, Pharmacognomist, Orchiologist etc

All the personnel professionally trained find employment in Town and Country Planning, Community Development Blocks, Indian Council of Agricultural Research, Food Research Laboratories, Central and State Research Institutes and Agriculture Departments, Agricultural Universities and Schools, Botanical Survey of India, Zoological Survey of India, Council of Scientific and Industrial Research.

In addition to the occupational opportunities that are available and quoted above some other opportunities lie in the field, namely, Scientific Officer, Research Officer, Deputy Director, Joint Director, Plant-Biochemist, Inspector, Section-Officer, Superintendent, Research Assistant, Fishery Officer, Science Teacher, College/University Teacher, Orchard Keeper, Overseer/Garden Supervisor, Laboratory Assistant, etc.

Education and Training. Training in Biology may be divided in two parts depending upon the level of competency as stated below:

(1) **Degree Courses.** Candidates who pass their 10 +2 or equivalent examination with science stream including Biology can go for university education culminating into B.Sc. (Pass) or B.Sc. (Hons). These courses are available in all the ordinary universities and agricultural universities. These courses are normally of three years' duration.

(2) **Post-Graduate Courses.** Specialised courses are available in all the subjects for degree holders in Biology leading to M.Sc. degree, which is of two years' duration. Research degrees are also available leading to Ph.D.

Candidates who offer Biology at their school certificate examination have an alternative choice in other fields like medicine, forestry, pure sciences. These have not been discussed because they fall under different professional fields.

In addition to the University courses leading to B.Sc. and M.Sc. degrees, there are other institutes which turn out professional degree holders in the field. They are mentioned below:

- (1) Indian Agricultural Research Institute, New Delhi.
- (2) National Dairy Research Institute, Karnal (Haryana).
- (3) Central Inland Fisheries Institute, Barrackpore (West Bengal).

- (4) Central Rice Research Institute, Cuttack (Orissa).
- (5) Jute Agricultural Research Institute, Barrackpore (West Bengal).
- (6) Institute of Horticultural Research, Bangalore (Karnataka).
- (7) Jute Technological Research Institute, Calcutta (West Bengal).
- (8) Indian Lac Research Institute, (Bihar).
- (9) Central Sheep and Wool Research Institute, Avikanagar, Malpura (Rajasthan).
- (10) Cotton Technological Research Laboratory, Matunga, Bombay (Maharashtra)
- (11) Indian Veterinary Research Institute, Izatnagar (Uttar Pradesh).
- (12) Central Arid Zone Research Institute, Jodhpur, Rajasthan).
- (13) Central Institute of Fisheries Technology, Cochin (Kerala).
- (14) Central Potato Research Institute, Simla (Himachal Pradesh).
- (15) Central Plantation Crops Research Institute, Kasargod (Kerala)
- (16) Central Soil Salinity Research Institute, Karnal (Haryana).
- (17) Indian Grassland & Fodder Research Institute, Jhansi (Uttar Pradesh).
- (18) Central Tuber Crops Research Institute, Trivandrum (Kerala).
- (19) Indian Agricultural Research Institute, New Delhi.
- (20) Sugarcane Breeding Institute, Coimbatore.
- (21) Central Marine Fisheries Research Institute, Cochin, (Kerala).
- (22) Indian Institute of Sugar Cane Research, Lucknow (Uttar Pradesh).
- (23) Central Tobacco Research Institute, Rajamundry (Andhra Pradesh).
- (24) Central Mango Research Station, Lucknow (Uttar Pradesh).
- (25) Vivekanand Laboratory for Hill Agriculture, Almora, (Uttar Pradesh).
- (26) Directorate of All India Soil & Land Use Survey, Nagpur, (Maharashtra).
- (27) Central Soil and Water Conservation Research and Training Institute, Dehradun (Uttar Pradesh).
- (28) Indian Council of Agricultural Research Complex, Shillong (Meghalaya).

There are special training facilities in Fisheries at the following Institutes:

- (1) Central Institute of Fisheries Education, Bombay.
- (2) Inland Fisheries Training Unit, Barrackpore, West Bengal.
- (3) Regional Training Centre for Inland Fisheries Operatives, Agra (UP).
- (4) Central Fisheries Extension Training Centre, Hyderabad (A.P.).
- (5) Central Institute of Fisheries Operatives, Cochin and Madras.
- (6) Marine Product Processing Training Centre, Mangalore (Karnataka).
- (7) Directorate of Fisheries, Bombay.

These training institutes conduct certificate, degree and post-graduate degree courses in fisheries covering training facilities for top management, middle management and lower cadres in the field of fisheries.

Apart from training facilities, these institutes offer employment opportunities to a sizeable number of professionally trained personnel in their teaching and research wings.

To facilitate prosecuting research studies for professional in the field certain research fellowships at junior and senior level and scholarships are offered by the University Grants Commission, Indian Council of Agricultural Research, New Delhi; Zoological Survey of India, Calcutta; Botanical Survey of India, Calcutta and Council of Scientific and Industrial Research, New Delhi. The value of fellowship/scholarship varies according to the individual institute.

There are occupational openings for these professionals in other departments like Eradication of Malaria, ornithology, pharmaceutical gardens, zoos, parks, sanctuaries, editors of agricultural magazines or newspapers etc.

Recruitment. Graduates/Post-Graduates in Biology and its other disciplines can compete for IAS and Allied Services conducted by the Union Public Service Commission. The examination is held in two parts: Preliminary and final examination. Appointment through this competitive examination does not offer specialised field to work in but they are absorbed in the posts of administrative nature. It may be a possibility that these professionals will have to forget about their subject field.

For entry into the professional field and in its higher cadre, Indian Agricultural Research Service has been independently functioning to select professionals through a competitive examination. The service is designed on scientists-centred system which means that promotions to the selected persons are not based on availability of vacancies but on the basis of periodic assessment irrespective of

the availability of vacancies. This in other word means promotions to higher grades are almost automatic. The selected persons can continue in the service upto the age of 60 years. This examination is held annually.

Union Public Service Commission conducts a competitive examination as Indian Forest Service to select persons to hold top positions in forestry. This examination is open to all types of graduates including degree holders in Biology. The examination is held annually.

Similar competitive examinations are held by State Public Service Commissions to select personnel to man the respective state Department of Forests. Candidates qualifying the examination are trained at Indian Forest College for two years at State expenses. These examinations are open to degree holders in science only and are appointed to the posts of Forest Officers, Assistant Forest Conservators, etc.

The biological scientists work closely with agricultural, industrial, medical and other scientists who are not aware of the impact of Biology on human needs.

Apart from the openings that are available through competitive examinations mentioned above, recruitment to other posts is done through the Central Local Employment Exchanges for the middle level and lower grade posts. Hence, persons qualified in Biological Sciences may like to register their names with the Employment Exchange nearest to their residence.

To be a life scientist, a person should have love for nature, both animal and plant life. He should be inquisitive. He should be a keen observer of happenings around him. Since his work involves field duties he should necessarily be hard-working and must also possess aptitude for scientific work. Results of scientific work are hard earned and hence he should also be patient to await for final results without becoming impetuous for them. Remunerations depend upon the nature of post held and are analogous to similar posts of the Govt. in other departments.

Life is a precious thing. Human life, above all life, is still precious. Rearing of other life is for human consumption only. If natural balance is disturbed, there is an impending danger to human life. Hence to protect human life, protection of other life is important. In fact, these scientists give more importance to other life rather than their own. Will anybody like to pluck a beautiful flower from its stalk? No body can appreciate the beauty of that flower without its natural setting. The same thing holds good for other lives. Life scientists therefore, render important service to the Nature. You may perhaps, do the same by becoming a life scientist.

CHAPTER 37

NATIONAL INSTITUTES/LABORATORIES PUBLIC SECTOR UNDERTAKINGS

The purpose of giving these Institutes/Laboratories/Public Sector undertakings is to acquaint people with the type of work they undertake i.e. maintaining a list of names of persons working in scientific and technological fields, distribution of scientific information and preservation of documents on different nature. This will help them to know the prospects of employment and enhancing their career after getting entry into them by undertaking research work there. These Institutes carry research in various scientific and technological fields

National Institutes

1. Regional Research Laboratory, Hyderabad.
2. National Geophysical Research Institute, Hyderabad
3. Nutrition Research Laboratory, Hyderabad
4. Regional Research Laboratory, Jorhat
5. Central Fuel Research Institute, Jilgora. Dhanbad.
6. Central Mining Research Station, Dhanbad.
7. Central Sugaracane Research Institute, Pusa, Bihar
8. Indian Lac Research Institute, Ranchi.
9. National Metallurgical Laboratory, Jamshedpur.
10. National Physical Laboratory, Hillside Road, New Delhi.
11. Central Road Research Institute. Okhla, New Delhi
12. Indian National Scientific Documentation Centre, New Delhi
13. Central Institute for Scientific Information and Publications Directorate, New Delhi.
14. All India Institute of Medical Sciences, New Delhi.
15. Indian Agricultural Research Institute, Pusa Road, New Delhi.
16. Malaria Institute of India, New Delhi.
17. Shriram Institute for Industrial Research, 19 University Road, Civil Lines, New Delhi.
18. Telecommunications Research Station, New Delhi.
19. Vallabhabhai Patel Chest Institute, New Delhi.
20. Central Salt and Marine Chemical Research Institute, Bhavnagar.
21. Physical Research Laboratory, Ahmedabad.

22. National Institute of Oceanography, Panaji.
23. National Dairy Research Institute, Karnal.
24. Central Potato Institute, Simla.
25. Central Research Institute, Kasauli.
26. Regional Research Laboratory, Jammu Tawi.
27. Central Coconut Research Station, Kasargod.
28. Central Coconut Research Station, Ochid (Kerala).
29. Central Food Technological Research Institute, Mysore.
30. National Aeronautical Laboratory, Bangalore.
31. Visvesaraiyya Industrial and Technological Museum, Bangalore.
32. Forest Research Laboratory, Bangalore.
33. National Dairy Research Institute, Bangalore.
34. Raman Research Institute, Hebbal, Bangalore.
35. Institute of Plot Industries, Indore.
36. Jiwaji Industrial Research Laboratory, Gwalior.
37. National Chemical Laboratory, Pune.
38. Central Public Health Engineering Research Institute, Nagpur.
39. M. L. Lal Scientific and Technological Museum, Worli, Bombay.
40. Atomic Energy Establishment (Bhabha Atomic Research Centre) Trombay, Bombay.
41. Cement Research Institute of India, Bombay.
42. Central Water and Power Research Station, Khadakwasla, Pune.
43. Deep Sea Fishing Station, Sir Feroz Shah Mehta Road, Bombay.
44. Haffkine Institute, Parel, Bombay.
45. Indian Cancer Research Station, Bombay.
46. Maharashtra Association of Cultivation of Sciences, Bombay.
47. Taraporewalla Marine Biological Research Station, Bombay.
48. Tata Institute of Fundamental Research, Bombay.
49. Regional Research Laboratory, Bhubaneswar.
50. Central Scientific Instruments Organization, Chandigarh.
51. Central Electronics Engineering Research Institute, Pilani.
52. Central Leather Research Institute, Adyar, Madras.
53. Central Electrochemical Research Institute, Karaikudi.
54. CSIR (Madras Complex), Adyar, Madras.
55. Astrophysical Laboratory, Kodaikanal.
56. Central Leprosy Research Institute, Madras.

57. **Central Marine Fisheries Research Institute, Mandpam Camp, Madras.**
58. **King Institute of Preventive Medicine, Guindi, Madras.**
59. **Pasteur Institute of Southern India, Kannur.**
60. **Sugarcane Breeding Institute, Coimbatore.**
61. **Institute of Mathematical Science, Madras.**
62. **Central Drug Research Institute, Lucknow.**
63. **National Botanical Gardens, Lucknow.**
64. **Central Building Research Institute, Roorkee.**
65. **Indian Institute of Petroleum, Dehradun.**
66. **Structural Engineering Research Institute, Roorkee.**
67. **Industrial Toxicology Research Centre, Lucknow.**
68. **Birbal Sahani Institute of Palaeobotany, Lucknow.**
69. **Central Indian Medicinal Plants Organization, Lucknow.**
70. **Central Forest Research Institute, Dehradun.**
71. **Grain Storage Research and Training Institute, Hapur.**
72. **Indian Institute of Handloom Technology, Varanasi**
73. **Indian Institute of Sugarcane Research, Lucknow.**
74. **Indian Veterinary Research Institute, Mukteshwar (UP)**
75. **Indian Veterinary Research Institute, Izatnagar (UP).**
76. **Research Design Standards Organization (Indian Railway), Lucknow.**
77. **Shaildhar Institute of Soil Science, Allahabad.**
78. **Central Glass and Ceramic Research Institute, Jadavpur, Calcutta.**
79. **Central Mechanical Engineering Research Institute, Durgapur.**
80. **Central Sericulture Research Institute, Behampur.**
81. **Indian Association of Cultivation of Sciences, Calcutta.**
82. **Indian Institute for Bio-chemistry and Experimental Medicine, Calcutta.**
83. **Indian Paint Research Association, Calcutta.**
84. **Indian Statistical Institute, Calcutta.**
85. **Institute of Nuclear Physics, Calcutta.**
86. **Jute Agricultural Research Institute, Barrackpore, 24 Pargana.**
87. **Institute of Post-Graduate Medical Education and Research, Calcutta.**
88. **River Research Institute, Calcutta.**
89. **All India Institute of Hygiene and Public Health, Calcutta.**
90. **Bengal Immunity Research Institute, Calcutta.**

91. Royal Botanical Gardens, Botanical Survey of India, Shivpur, Howrah.
92. Central Drug Research Laboratory, Calcutta.
93. Centre for Cellular and Molecular Biology, Hyderabad.
94. National Environmental Engineering, Nagpur.
95. Cement Research Institute of India, Ballabgarh.
96. Toxklai Experimental Station, Jorhat.
97. Wool Research Association, Bombay.
98. All-India Institute of Speech and Hearing, Mysore.
99. Cholera Research Centre, Calcutta.
100. Indian Council of Medical Research, New Delhi.
101. Indian Registry of Pathology, New Delhi.
102. Institute for Research in Reproduction, Bombay.
103. National Institute of Cholera and Enteric Diseases, Calcutta.
104. National Institute of Occupational Health, Ahmedabad.
105. National Institute of Virology, Pune.
106. Post-Graduate Institute of Medical Education and Research, Chandigarh.
107. Cancer Institute, Madras.
108. Central Leprosy Teaching and Research Institute, Chingleput.
109. Chittaranjan Cancer Research Centre, Calcutta.
110. Indian Cancer Research Centre, Bombay.
111. National Institute of Communicable Diseases, Delhi.
112. National Tuberculosis Institute, Bangalore.
113. School of Tropical Medicine, Calcutta.
114. Pasteur Institute, Coonoor.
115. Anthropological Survey of India, Calcutta.
116. Central Water Power Research Institute, Bangalore and Bhopal.
117. Geological Survey of India, Calcutta.
118. Indian Institute of Tropical Meteorology, Pune.
119. Indian Institute of Geomagnetism, Bombay.
120. Indian Roads Congress, Ministry of Transport, New Delhi.
121. Electronics Corporation of India, Hyderabad.
122. High Altitude Research Laboratory, Gulmarg (Kashmir).
123. Indian Rare Earths Ltd, Alwayee.
124. Radio Astronomy Centre, Ootacamund.
125. Tata Memorial Centre, Bombay.
126. Saha Institute of Nuclear Physics.

127. Uranium Corporation of India, Jaduguda (Bihar).
128. Indian Scientific Satellite Project, Bangalore.
129. Indian Space Research Organization, Bangalore.
130. Propelling Fuel Complex, Trivandrum.
131. Satellite Launch Vehicle Project, Trivandrum.
132. Space Application Centre, Ahmedabad.
133. Space Commission, Bangalore.
134. Sri Harikota Range, Sri Harikota (A.P.).
135. Thumba Equatorial Rocket Launching Station, Thumba.
136. Vikram Sarabhai Space Centre, Trivandrum.
137. Bose Research Institute, Calcutta.
138. National Atlas Organization, Calcutta.
139. Indian National Science Academy.
140. Survey of India, Dehradun.
141. Wadia Institute of Himalayan Zoology, Delhi.
142. Zoological Survey of India, Calcutta.

Some Important Research Associations

1. Tea Research Association, Calcutta.
2. Ahmedabad Textile Industries Research Association, Ahmedabad.
3. Silk and Art Silk Mills Research Association, Worli, Bombay.
4. South India Textile Research Association, Coimbatore.
5. Bombay Textile Research Association, Ghatkopar, Bombay.
6. Indian Plywood Industries Research Association, Yashwantpur Bangalore.
7. Indian Jute Industries Research Association, Calcutta.
8. Wood Research Association, VJTI, Matunga, Bombay.
9. Cement Research Association of India, New Delhi.
10. Indian Rubber Manufacturers Research Association, Thane.
11. Automotive Research Association of India, Pune.
12. Indian Paint Research Association, Alipore, Calcutta.

Defence Research Laboratories/Institutes

1. Defence Science Laboratory, Metcalf House, New Delhi.
2. Defence Institute of Fire Research, New Delhi.
3. Solidstat Physics Laboratory, New Delhi.
4. Aerial Research & Development Establishment, Agra Cantt.
5. Defence Research & Development Establishment, Gwalior.

6. **Proof & Experimental Establishment, Balasore.**
7. **Vehicle Research & Development Establishment, Ahmednagar.**
8. **Combat Vehicle Research & Development Establishment, Madras.**
9. **Naval Chemical & Metallurgical Laboratory, Bombay**
10. **Gas Turbine Research Establishment, Bangalore**
11. **Naval Physical & Oceanographic Laboratories, Cochin**
12. **Electronics & Radar Development Establishment, Bangalore.**
13. **Aero-Bio Engineering Unit, Bangalore**
14. **Centre for Physical & Oceanographic Laboratories, Pune and Bangalore.**
15. **Research & Development Engineers Establishment, Dighi**
16. **Armament Research & Development Establishment, Pashan, Pune**
17. **Explosives Research & Development Laboratories, Pashan, Pune.**
18. **Institute of Armament Technology, Pune.**
19. **College of Military Engineering Pune**
20. **Naval College of Engineering, Lonawala**
21. **Military College of Electrical & Mechanical Engineering, Secunderabad**
22. **Air Force Academy, Hyderabad.**
23. **Electrical & Mechanical Engineering School, Vadodara.**
24. **Naval Air Technical School INS Garuda Cochin**
25. **Air Force Technical College Bangalore**
26. **Indian Air Force Training Centre, Madras**
27. **National Defence Academy, Khadakwasla, I**
28. **Indian Military Academy, Dehradun.**

Military Training Institutes

1. **Rastriya Indian Military College, Dehradun**
2. **National Defence College, New Delhi**
3. **Defence Services Staff College Wellington.**
4. **Armed Forces Medical College, Pune.**
5. **Officers Training School, Madras.**
6. **College of Combat, Mhow**
7. **Armoured Corps. Centre & School, Ahmednagar**
8. **Infantry Schools, Mhow & Belgaum.**
9. **School of Artillery, Deolali.**
10. **Military College of Communication Engineering, Mhow.**

11. Institute of Defence Management, Secunderabad.
12. Army Cadet College, Dehradun.
13. Army Ordnance Corps School, Jabalpur.

Naval Training Centres

1. INS Circar, Vishakhapatnam.
2. INS Hamala, Bombay.
3. INS Shivaji, Lonawala.
4. INS Valsura, Jamnagar.
5. INS Venduruthy, Cochin.
6. Naval Academy, Cochin.
7. Naval Air Station, Garud, Cochin.
8. Sailors' Training Establishment, Dabolim (Goa).

Air Force Training Centres

1. Air Force Administrative College, Coimbatore.
2. Air Force Technical College, Jabalpur.
3. Air Force School, Samba, Belgaum.
4. Flying Inspectors' School, Jhambaram.
5. Elementary Flying School, Bidar.
6. Fighter Training & Transport—Training Wings of the Air Force, Hakimpeth and Yelhanka.
7. Institute of Aviation Medicine, Bangalore.
8. Paratroopers Training School, Hyderabad.
9. Navigation & Signal School, Hyderabad.
10. College of Air Warfare, Secunderabad.

Defence Production Units

1. Bharat Dynamics Ltd., Hyderabad.
2. Bharat Earthmovers Ltd., Bangalore.
3. Bharat Electronics Ltd., Bangalore.
4. Garden Reach Shipbuilders and Engineers, Calcutta.
5. Goa Shipyard, Goa.
6. Heavy Vehicles Factory.
7. Hindustan Aeronautics Ltd., Bangalore, Nasik, Koraput, Hyderabad, Kanpur and Lucknow.
8. Mazgaon Docks, Bombay.
9. Mishra Dhatu Nigam, Hyderabad.
10. Praga Tools, Hyderabad.

A List of Public Enterprises

(As on 1-12-1985)

1. Air India, Air India Building, Nariman Point, Bombay.
2. Andaman and Nicobar Islands, Forest and Plantation Dev. Corpn Ltd, P O Hadde, Port Blair
3. Andrew Yule and Co Ltd, Yule House, 8 Clive Row, Calcutta.
4. Artificial Limbs Mfg Corpn of India, G T Road, Kanpur (U.P.).
5. Bengal Chemicals and Pharmaceuticals Ltd., P B No 8992, 6, Ganesh Chunder Avenue, Calcutta
6. Bengal Immunity Ltd, 153, Lalan Sarani, Calcutta
7. Bharat Aluminium Co Ltd., Punj House, 18, Nehru Place, New Delhi
8. Bharat Brakes and Valves Ltd, 22, Gobra Road, Calcutta.
9. Bharat Dynamics Ltd, Kanchanbagh, Hyderabad
10. Bharat Earth Movers Ltd, Unity Building, J C Road, Bangalore
11. Bharat Electronics Ltd, 29/4, Race Course Road, Bangalore
12. Bharat Gold Mines Ltd, 'Suvarna Bhavan', Oorgaum, P.O. K.G F. Karnataka
13. Bharat Heavy Electricals Ltd Hindustan Times House. 18-20, K G Marg, New Delhi
14. Bharat Heavy Plates and Vessels Ltd, Visakhapatnam (A P).
15. Bharat Leather Corpn Ltd, Hemikunt House. 10th Floor, 6, Rajendra Place, New Delhi
16. Bharat Ophthalmic Glass Ltd, Lalan Sarani Calcutta (W.B.)
17. Bharat Petroleum Corpn Ltd, 4-6, Currier Roy Road, Bharat Bhavan Ballard Estate, P B. No 688, Bombay.
18. Bharat Process and Mechanical Engineers Ltd, Chartered Bank Building, 4 Netaji Subhash Road, Calcutta
19. Bharat Pumps & Compressors Ltd, Nami, Allahabad
20. Bharat Refractories Ltd P B No 1, Bokaro Steel City
21. Bharat Wagon & Engg Co Ltd, Maurya Lok, C Block, Dak Bangalow Road, Patna (Bihar).
22. Bongaigaon Refinery & Petrochemicals Ltd., P.O. Dhaligaon, Distt Goalpara.
23. Braithwaite & Co. Ltd, 5, Hide Road, Calcutta
24. Bridge & Roof Co (I) Ltd.. 427/1, G.T. Road, Howrah.
25. British India Corporation Ltd, Sutherland House, Post Box 77, Kanpur (U.P.).
26. Burn Standard Co. Ltd., 10-C, Hungerford Street, Calcutta.

27. Cardamom Trading Corpn. Ltd., Gopalakrishna Complex, No. 45/3, Residency Cross Road, Bangalore.
28. Cement Corporation of India Ltd., Shakuntala, 59 Nehru Place, New Delhi.
29. Central Electronics Ltd., 4, Industrial Area, Sahibabad.
30. Central Inland Water Transport Corpn. Ltd., 4, Fairlie Place, P.B. No. 2664, Calcutta.
31. Central Warehousing Corpn., 4/1, Siri Institutional Area, Hauz Khas, Opp. Siri Fort, New Delhi.
32. C.M.C. Limited, World Trade Centre, Cuffe Parade, Bombay.
33. Coal India Limited, 10, Netaji Subhash Road, Calcutta.
34. Cochin Refineries Ltd., P.B. No. 2, Ambalamugai (Kerala).
35. Cochin Shipyard Limited, P.B. No. 1653, Cochin.
36. Cotton Corpn. of India Ltd., Air India Bldg, 12th Floor, Nariman Point, P.B. No. 1350, Bombay.
37. Cycle Corpn. of India Ltd., 1, Middleton Street, Calcutta.
38. Delhi Transport Corporation, I.P. Estate, New Delhi.
39. Dredging Corporation of India Limited, Jeevan Prakash, Vishkhapatnam
40. Educational Consultants of India Ltd., A-1/111, Safdarjung Enclave, New Delhi.
41. Electronics Corpn. of India Ltd., ECIL Post Office, Hyderabad.
42. Electronics Trade & Tech. Dev. Corpn. Ltd., 15/48, Malcha Marg, Chanakyapuri, New Delhi.
43. Engineering Projects India Ltd., "Kailash", K.G. Marg, New Delhi.
44. Engineers India Ltd., E.I. House, Bhikaji Cama Place, New Delhi
45. Fertilizer Corpn. of India Ltd., Madhuban, 55, Nehru Place, New Delhi.
46. Fertilizer and Chemicals Travancore Limited, Udyogamandal, Kerala.
47. Food Corpn. of India Ltd., 16-20, Barakhamba Lane, New Delhi.
48. Garden Reach Shipbuilders and Engineers Ltd., 43/46, Garden Reach Road, Calcutta.
49. Gas Authority of India Ltd., Hotel Samrat, Kautilya Marg, New Delhi.
50. Heavy Engineering Corpn. Ltd., Plant Plaza Road, P.O. Dhurwa, Ranchi.
51. Hindustan Aeronautics Ltd., Indian Express Building, Vidhan Veedhi, Bangalore.

52. Hindustan Antibiotics Ltd., Pimpri, Pune.
53. Hindustan Cables Ltd., 9, Elgin Road, Calcutta
54. Hindustan Copper Ltd., Industry House, 10-Camac Street, Calcutta.
55. Hindustan Fertilizer Corpn. Ltd., Madhuban, 55, Nehru Place, New Delhi
56. Hindustan Insecticides Ltd., Hans Bhavan (G. Floor, Wing-I), B. S. Z Marg, New Delhi.
57. Hindustan Latex Limited, Latex Bhavan, Mahilamandriam Road, Poojappura, Trivandrum.
58. Hindustan Organic Chemicals Ltd., P.O. Rasayani, Distt. Raigad, Maharashtra.
59. Hindustan Paper Corpn. Ltd , 75-C, Park Bhavan, Calcutta.
60. Hindustan Petroleum Corpn Ltd , 17, Jamshedji Tata Road, Bombay.
61. Hindustan Photo Films Manufacturing Co Limited, Indunagar, Ootacamund
62. Hindustan Pef Ltd , Jangpura, New Delhi
63. Hindustan Salts Ltd , Lal Niwas, 21, Ram Singh Road, Post, Box No. 146, Jaipur.
64. Hindustan Steelworks Constn Ltd., 1, Shakespeare Sarani, Calcutta.
65. Hindustan Shipyard Ltd , Vishakhapatnam
66. Hindustan Teleprinters Ltd., GST Road, Guindy, Madras.
67. Hindustan Vegetable Oils Corpn Limited, 16, Nehru Place, New Delhi.
68. Hindustan Zinc Ltd , 7, New Fatchpura, Jaipur.
69. HMT Limited 36, Cunningham Road, Banmore.
70. Hoogly Dock & Port Engineers Ltd. 12, Mission Row, Calcutta
71. Hospital Services Consultancy Corpn of India Ltd., Bharatiya Kalakendra Building, 3rd Floor, 1, Copernicus Marg, New Delhi.
72. Housing & Urban Dev. Corpn., Ltd , HUDCO House, Lodi Road, New Delhi.
73. IBP Co. Limited, Allahabad Bank Building, 17, Sansad Marg, New Delhi.
74. Indian Tourism Dev. Corpn , Jeevan Vihar Building, Sansad Marg, New Delhi.
75. Indian Airlines. Airlines House, New Delhi.
76. Indian Dairy Corporation Darpan, R. C. Dutt Road, Vadodara.
77. Indian Drugs & Pharmaceuticals Ltd., IDPL Complex, Dundahera, Gurgaon (Haryana).

78. Indian Medicines Pharmaceutical Corpn. Ltd., Mohan (Via) Ramnagar Distt, Almora (U.P.).
79. Indian Oil Corpn. Ltd., Indian Oil Bhavan, Janpath, New Delhi.
80. Indian Petrochemicals Corpn., P.O. Petrochemicals Distt, Vadodara (Gujarat).
81. Indian Railway Constrn. Co. Ltd., Palika Bhavan, Sector-XIII, R. K. Puram, New Delhi.
82. Indian Rare Earths Ltd., Pil Court, 6th Floor, 111 Maharshi, Karve Road, Bombay.
83. Indian Road Constrn. Corpn. Ltd., Raja House, Nehru Place New Delhi.
84. Indian Telephone Industries Limited, 16, Museum Road, Bangalore.
85. Instrumentation Ltd., Kota (Rajasthan).
86. International Airports Authority of India Ltd., Yashwant Place, Chanakyapuri New Delhi.
87. Jessop & Co. Ltd., 63, Netaji Subhash Road, Calcutta.
88. Jute Corporation of India Ltd., I, Shakespeare Sarani, Calcutta.
89. Kudremukh Iron Ore Co. Ltd., II Block Keramangala, Bangalore.
90. Lagan Jute Machinery Co. Ltd., 24 B. Part Street, Calcutta.
91. Lubrizol India Ltd., Delstar, 9-A, S. Patkar Marg, Bombay.
92. Madras Fertilizers Ltd., Manali, Madras.
93. Madras Refineries Ltd., Refinery House, Manali Madras.
94. Manganese Ore (India) Ltd., 3, Mount Road Extension, Nagpur.
95. Maruti Udyog Ltd., 11th Floor, 13, Jeevan Prakash Building, 25 Kasturba Gandhi Marg, New Delhi.
96. Mazgaon Dock Ltd., Dockyard Road, Mazgaon, Bombay.
97. Metal Scrap Trade Corpn. Ltd., 225 F, Acharya Jagdish Bose Road, Calcutta.
98. Metallurgical and Engineering Consultants (India) Ltd., Ranchi.
99. Mineral Exploration Corpn. Ltd., Seminary Hills, Nagpur.
100. Minerals and Metals Trading Corpn. of India Ltd., P.B No. 7051, Express Building, B. S. Z. Marg, New Delhi.
101. Mining and Allied Machinery Corpn. Ltd., Durgapur (W.B.).
102. Mishra Dhatu Nigam Ltd., P.O. Kanchan Bagh, Hyderabad.
103. Modern Food Industries (I) Ltd., 103, Palika Bhavan, 3rd Floor, R. K. Puram, Ring Road, New Delhi.

104. Mogul Line Ltd., 16, Bank Street, Bombay.
105. National Aluminium Co. Ltd., IDCO Towers, Janpath, Bhubaneswar.
106. National Bicycle Corpn. of India Ltd., 250 Worli, P.O. Prabhadevi, Bombay.
107. National Building Constn , Corporation Ltd., NBC House, Lodhi Road, New Delhi.
108. National Fertilizers Ltd., 20, Community Centre, East of Kailash, New Delhi.
109. National Film Development Corporation Ltd., 13-16, Regent Point, 208, Nariman Point, Bombay.
110. National Handloom Development Corporation Ltd , B-1/89 B, Aliganj, Lucknow.
111. National Hydro-electric, Power Corpn Ltd., 98, Hemkunt Tower, Nehru Place, New Delhi.
112. National Industrial Development Corporation Ltd., P B. No. 5212, Chankaya Bhavan, Africa Avenue. New Delhi.
113. National Instruments Ltd., Jadavpur, Calcutta.
114. National Jute Manufacturers Corporation Ltd., Chartered Bank Building, 2nd Floor, 4, Netaji Subhash Road, Calcutta
115. National Mineral Developmet Corpn. Ltd , 10-3-311/A Castle Hills, Masab Tank, Hyderabad.
116. National Newsprint and Paper Mills Ltd., Nepanagar (M P).
117. National Projects Constn Corpn. Ltd., Raja House, 30-31, Nehru Place, New Delhi.
118. National Research Development Corporation of India Ltd., 20-22, Zamroodpur Community Centre, Kailash Colony Ext., New Delhi.
119. National Seeds Corporation Ltd , Beej Bhavan, Pusa Complex, New Delhi.
120. National Small Industries Corporation Ltd . Laghu Udyog Bhavan, Okhla Industrial Estate, New Delhi.
121. National Textile Corporation Limited, Surya Kiran Building, 19, K. G. Marg, New Delhi.
122. National Thermal Power Corpn. Ltd., NTPC Square, 62-69, Nehru Place, New Delhi.
123. Neelachal Ispat Nigam Ltd., IPICOL House, 4th Floor, Bhubaneswar.
124. Neyveli Lignite Corporation Ltd , P O. Neyveli, South Arcot Distt. (T.N.).
125. North Eastern Regional Agricultural Marketing Corporation Ltd. Rajgarh Road, Guwahati.

126. North Eastern Electric Power Corpn. Ltd , Bawri Mansion, Dhankheti, Shillong.
127. North Eastern Handicrafts and Handlooms Development Corpn. Ltd., Upper Lachumiere, Shillong.
128. Oil India Ltd., Allahabad Bank Building, 17, Parliament Street, New Delhi.
129. Oil and Natural Gas Commission ■ Tel Bhavan, Dehradun
130. Paradeep Phosphates Ltd., 101, Hemkunt Tower, 98, Nehru Place, New Delhi.
131. Fraga Tools Ltd , Kavadiguda Road, Secunderabad
132. Project and Development India Ltd., Sindri, Dhanbad (Bihar).
133. Pyrites, Phosphates and Chemicals Ltd , 6, Community Centre, East of Katlash, New Delhi.
134. Rail India Technical and Economic Services Ltd , New Delhi House, 27, Barakhamba Road, New Delhi.
135. Rashtriya Chemicals and Fertilizers Ltd., Chembur, Bombay
136. Rashtriya Ispat Nigam Ltd , Visakhapatnam Steel Project Ltd , Visakhapatnam
137. Rehabilitation Industries Corporation Ltd , 25, Free School Street, Calcutta.
138. Richardson and Cruddas (1972) Ltd , Byeulla Iron Works, Bombay.
139. Rural Electrification Corpn Ltd , DDA Building, Nehru Place, New Delhi.
140. Scooters India Ltd , P B No 1, Sarojini Nagar, Lucknow
141. Semi-Conductor Complex Ltd , Phase-VIII, S A S. Nagar (Near Chandigarh), Punjab.
142. Shipping Corpn. of India Ltd Shipping House, 245, Madame Cama Road, Bombay
143. Smith Stanistreet Pharmaceuticals Ltd., 18, Convent Road, Calcutta.
144. Sponge Iron India Ltd , 6-3-899 4, Raj Bhavan Road, Somajiguda, Hyderabad.
145. State Farms Corpn. of India Ltd., Beej Bhavan, CTO Building, Pusa Institute Complex, New Delhi
146. State Trading Corpn. of India Ltd., Chadialok, 36, Janpath, New Delhi.
147. Steel Authority of India Ltd., Ispat Bhavan, Lodhi Road, New Delhi.
148. Tannery and Footwear Corpn. of India Ltd., 13/400 Civil Lines, Kanpur.
149. Tea Trading Corpn. of India Ltd., 7, Wood Street, Calcutta.

150. Telecommunications Consultants India Ltd., Chiranjiv Tower, 43, Nehru Place, New Delhi.
151. Trade Fair Authority of India Ltd., Pragati Maidan, New Delhi
152. Triveni Structural Ltd., Naini, Allahabad.
153. Tungabhadra Steel Products Ltd., P.O. Tungabhadra Dam (Karnataka)
154. Uranium Corpn of India Ltd., Jaduguda Mines, Singhbhum, Bihar
155. Tyre Corporation of India Ltd., 19, J. L. Nehru Road, Calcutta
156. Vijayanagar Steel Ltd., Shankaranarayana Building, 25, Mahatma Gandhi Road, Bangalore
157. Water and Power Consultancy Services (I) Ltd., 'Kailash' 26, K. G. Marg, New Delhi
158. Air India Charters Ltd., 5th Floor, Centaur Hotel, Bombay.
159. Hotel Corpn. of India Ltd., 5th Floor, Centaur Hotel, Bombay

Subsidiaries of Andrew Yule & Co.

160. Barabhat Tea Co. Ltd., 8, Clive Row, Yule House, Calcutta.
161. Basantia Tea Co. Ltd., 8, Clive Row, Yule House, Calcutta.
162. Hoogly Printing Co. Ltd., 8, Clive Row, Yule House, Calcutta.
163. Hoolungoorree Tea Co. Ltd., 8, Clive Row, Yule House, Calcutta
164. M. M. Tea Co. Ltd., 8, Clive Row, Yule House, Calcutta
165. Murphulam (Assam) Tea Co. Ltd., 8, Clive Row, Yule House, Calcutta.
166. Rajgarh Tea Co. Ltd., 8, Clive Row, Yule House, Calcutta.

Subsidiary of Bharat Process and Mechanical Engineers Ltd

167. Weighbund India Ltd., Chartered Bank Building, 4, Netaji Subhash Road, Calcutta.

Subsidiary of Bharat Refractories Ltd

168. India Firebricks & Insulation Co. Ltd., P.O. Marar, Distt. Hazari Bagh (Bihar).

Subsidiaries of British India Corpn. Ltd.

169. Cawnpore Textile Ltd., 85/20, Cooper Ganj, Kanpur (U.P.).
170. Brushware Ltd., Southerland House, Civil Lines, Kanpur
171. Elgin Mills Ltd., 11/6 Shrimati Prabhavati Road, Kanpur.

Subsidiary of Cement Corpn. of India Ltd.

172. Damodar Cement and Slag Ltd., 6A, Middle-Ton Street, Calcutta.

Subsidiaries of Coal India Ltd.

173. Bharat Coking Coal Ltd., Koyla Bhavan, Koyla Nagar, Dhanbad (Bihar).
 174. Central Coalfields Ltd., Darbhanga House, Ranchi.
 175. Cent'al Mine Planning & Design Institute Ltd., Gondwana Placc, Kanke Road, P.B. No 2, Ranchi.
 176. Eastern Coalfields Ltd, Sanctoria, P.O. Disergarh Distt. Burdwan (W.B.).
 177. Western Coalfields Ltd., Coal Estate, Civil lines, Nagpur.

Subsidiaries of Hindustan Antibiotics Ltd.

178. Maharashtra Antibiotics & Pharmaceuticals Ltd., L-1, MIDC Area, Hingne Road, Nagpur.
 179. Goa Antibiotics & Pharmaceuticals Limited, E-2, Ramakant Apartment Albuquerque Road, Panaji.
 180. Karnataka Antibiotics & Pharmaceuticals Ltd., P.B. No. 9902, 174. VI Cross Road, Gandhinagar, Bangalore (Karnataka).

Subsidiary of Hindustan Insecticides Ltd.

181. Southern Pesticides Corpn Ltd., 10-5-3/2 2, Masab Tank, Hyderabad.

Subsidiary of Hindustan Organic Chemicals Ltd.

182. Hindustan Fluorocarbons Ltd., C/o Hindustan Organic Chemicals Ltd., P.O. Rasayani, Distt. Raigad, Maharashtra.

Subsidiary of Hindustan Paper Corporation Ltd.

183. Hindustan Newsprint Ltd., Newsprint Nagar, Kottayam, Kerala.
 184. Mandya National Paper Mills Ltd., Belagula (Karnataka).
 185. Nagalan' Pulp & Paper Co. Ltd., P.O. Tuli Distt. Mokok Chang, Nagaland.

Subsidiary of Hindustan Salts Ltd.

186. Sambhar Salts Ltd., Lal Niwas, 21 Ram Singh Road, Jaipur, (Rajasthan).

Subsidiaries of HMT Ltd.

- 187. HMT Bearings Ltd., Maula Ali, Hyderabad.
- 188. HMT (International) Ltd., 6, Cunnigham Road, Bangalore.

Subsidiaries of IBP Co Ltd

- 189. Balmer Lawrie & Co Ltd , 21, Netaji Subhash Road, Calcutta.
- 190. Balcco Lawrie Ltd , 6, Mayurbhanj Road, Calcutta.

Subsidiaries of Indian Air Lines

- 191. Vayudoot, Engineering School Building, Safdarjung Airport, New Delhi
- 192. Air Lines Allied Services Ltd C/o Indian Air Lines Office, Air Lines House, New Delhi.

Subsidiaries of Indian Drugs & Pharmaceuticals Ltd.

- 193. Orissa Drugs & Chemicals Ltd., 93, Surya Nagar Bhubaneswar (Orissa)
- 194. Punjab Maize Products Ltd , Uppli Road, P.B. No. 32, Sangrur (Punjab)
- 195. Rajasthan Drugs & Pharmaceuticals Ltd , Road No 12, V.K I. Area, Jaipur
- 196. U.P. Drugs & Chemicals Ltd , Kanpur Road, Lucknow.

Subsidiary of Indian Oil Corporation Ltd

- 197. Indian Oil Blending Ltd , 106 Maker Chambers-III, Nariman Point-223, Bombay

Subsidiary of Instrumentation Ltd

- 198. Rajasthan Electronic & Instruments Ltd , D- 'A, Madho Singh Road, Bani Park, Jaipur

Subsidiary of Mazagaon Dock Ltd

- 199. Goa Shipyard Ltd Vasco-da-gama Goa

Subsidiary of Metal Scrap Trade Corporation Ltd

- 200. Ferro Scrap Nigam Ltd , P.B. No 73, Jamshedpur.

Subsidiary of Minerals & Metals Trading Corpn of India Ltd

- 201. Mica Trading Corpn of (I) Limited, 137, Patliputra Colony, Patna (Bihar)

Subsidiaries of National Textile Corporation Limited

- 202. National Textile Corpn (Andhra Pradesh, Karnataka, Kerala & Maharashtra) Ltd., Nanjapa Mansion, 3rd Floor, P.B. No. 2713, 29/2 H.H. Road, Shanthi Nagar, Bangalore.

203. National Textile Corpn. (Delhi, Punjab and Rajasthan) Ltd., Vandhana Building, 9th Floor, 11 Tolstoy Marg, New Delhi.
204. National Textile Corpn. (Gujarat) Ltd., Handloom House, 1st Floor, Ashram Road, Ahmedabad.
205. National Textile Corpn. (Maharashtra North) Ltd., N.T.C. House, 15, Narottam Morari Marg, Bombay.
206. National Textile Corpn. (South Maharashtra) Ltd., 382, N.M. Joshi Marg, Chinchpokli, Bombay.
207. National Textile Corpn. (M.P.) Ltd., 27, Yashwant Niwas Road, Indore.
208. National Textile Corpn. (Tamil Nadu and Pondicherry) Ltd., N.T.C. House, 10/64, Somasundaram Mills Road, Coimbatore.
209. National Textile Corpn. (U.P.) Ltd., Sylverton, 14/82, Civil Lines, Kanpur.
210. National Textile Corpn. (W.B., Assam, Bihar and Orissa) Ltd., 7, Jawaharlal Nehru Road, Calcutta.

Subsidiary of Oil and Natural Gas Commission

211. Hydro Carbons (India) Ltd., Bank of Baroda Building, Sansad Marg, New Delhi.

Subsidiaries of State Trading Corporation

212. Cashew Corpn. of India Ltd., P B No 1261, Cochin, Kerala.
213. Central Cottage Industries Corpn. of India Ltd., (Subsidiary of HHEC) Janpath 'A' Barracks, New Delhi.
214. Handicrafts and Handlooms Export Corpn. of India Ltd., Lok Kalyan Bhavan, 11-1, Vishnu Digamber Marg, New Delhi.
215. Projects and Equipment Corpn. of India Ltd., Hansalaya, 15, Barakhamba Road, New Delhi.

Subsidiaries of Steel Authority of India

216. IISCO Stanton Pipe and Foundary Co. Ltd., P.B. No 11, Ujjain. (Subsidiary of IISCO)
217. Indian Iron and Steel Co. Ltd., Burnpur (W.B.).

Other

218. Export Credit and Guarantee Corporation of India Ltd., 10th Floor, Express Towers, Nariman Point, Bombay

Insurance Companies

1. General Insurance Corpn. of India, Industrial Assurance Building, Churchgate, Bombay.
2. Life Insurance Corpn., Yogakshma, Jeevan Beema Marg, Bombay.

3. **National Insurance Co. Ltd , Everest House, 3 Middleton Street, Calcutta.**
4. **New India Assurance Co Ltd., 87, Mahatma Gandhi Marg, Fort, Bombay.**
5. **Oriental Insurance Co Ltd., A-25/27 Asaf Ali Road, Oriental House, P B No 7037, New Delhi.**
6. **United India Co. Ltd , 24 Whites Road, Madras.**

Financial Institutions

1. **Industrial Finance Corpn. of India Ltd , Bank of Baroda Building, 16, Sansad Marg, P.B No 363, New Delhi.**
2. **Industrial Development Bank of India Mittal Court 'B' Wing, 224, Backbay Reclamation, Nariman Point, Bombay.**

Undertakings with Central Government Investment but without Responsibility of Management

1. **Damodar Valley Corpn , Bhabani Bhavan, Alipore, Calcutta.**
2. **Deccan Diamond Co. Ltd., Atlanta, 15th Floor, Nariman Point, Bombay**
3. **Singareni Collieries Co Ltd., Kethagudam (A P.)**
4. **Sikkim Mining Corpn , Rangpo (Sikkim)**
5. **Sindhu Resettlement Corpn Limited, Alipur (Kutch).**
6. **Vishvesvaraya Iron and Steel Ltd , Bhadravati (Karnataka).**
7. **Indian Explosives Ltd , 34 Chowringhee, Calcutta .**
8. **Machinery Manufacturing Corporation Ltd , P-5, 1B Circular Road, Calcutta**
9. **Wagon India Ltd 10-B Aima Ram House 1, Tolstoy Marg, New Delhi**

CHAPTER 38

CAREERS IN VARIOUS ARTS

The word art signifies human skill or craft used to imitate, design and have creative manifestation based on sensibility, ingenuity and inspiration. An artist must have ability to put on paper, canvas or in behaviour what he sees and visualises. The starting point i. any form of art is an inspiration or an idea spurred by spontaneity or as a result of instinctive and involuntary promptings of mind. The inspiration starts flowing naturally and automatically without conscious efforts or external forces

Very few people possess this art as an inborn quality. This further can be cultivated or learnt. What is required is that all the art work requires artist's concentration, hardwork, continuous practice, self-learning habits and constant experimentation with new methods, techniques and material.

Earlier, art was taken as an exclusive medium of communication, was looked at it with a purist's view point. This made it possible the art work that we witness today with stupelication, because this important means was used to express intense emotional aspects of life.

Over the years, there appeared a change in the attitude of people and this art became an instrument for expression, a past-time, a vocation or a hobby. The dictum 'Art for Art's sake' has now been transformed into 'Art for a living', because man's total pattern has undergone a change particularly after the great industrial revolution of the 18th Century.

Art and employment was not a viable equation earlier, but now it has become so. However, many artists still choose to have an independent work instead of working for others.

Many occupations have been developed which require many years of rigorous preparation apart from having talent, determination, willingness. The original talent for art can well be harnessed further through training and many people have succeeded in making a career in their respective arts.

There are various forms of art such as Fine Art, Performing Art, Dramatization and Commercial Art. These have been explained below in brief.

I. Fine Arts. The purpose of fine arts is to fulfil artist's desire for creation not necessarily aiming at monetary gains. That is why earlier arts got developed. The subjects chosen for were glorification

of kings and their conquests, human emotions, love and romance, anger and sorrow, joys and rejoicing, pleasure and pastime etc.

Aptitudes and Personal Qualities Required for Fine Arts

(1) **Creativeness** It is the capability to innovate and imagine new and interesting ideas attractive enough for people

(2) **Artistic Ability** Ability to translate the idea as the artist sees, feels, thinks or experiences

(3) **Form Perception** Judgment of shapes and forms, ability to perceive objects and their details and to make visual comparisons etc

(4) **Good Visual Memory** Ability to remember shapes, form-dimensions and colour effects

(5) **Spatial Ability.** Ability to visualise objects in two or three dimensions and geometric forms

(6) **Colour Discrimination** Sense of colour harmony, ability to identify and discriminate colours and shades as also to visualise and recognise effect of colour combinations/contrasts

(7) **Good Vision** Good eye sight, free from colour blindness.

(8) **Manual Finger Dexterity** Ability to move and manipulate hands and fingers skillfully and accurately

(9) **Abstract Reasoning** Ability to express ideas by means of visualisation viz., charts, tables, diagrams, symbols, drawings, pictures, figures, etc

Occupational Opportunities The following occupations are available for employment:

Painter, Renovator, Cartoonist, Sculptor, Modeller, Stone Modeller, Stone Maker, Art Critic/Reviewer, Art Editor, Art Salesman, Art Teacher

The following departments offer employment to these people. State Departments of Education, Schools, Polytechnics, art galleries, newspapers, journals, firms of architecture, public and local bodies, T.V and Radio Studios, advertising agencies. Self employment is more possible than the wage paid employment.

The following institutes offer training in various fine arts There are a number of schools offering training in these arts and hence all cannot be mentioned here. An attempt has been made to give state-wise information about various diploma/certificate courses that are available :

<i>Sl. No.</i>	<i>State</i>	<i>Course</i>	<i>Duration</i>	<i>Admission Qualification</i>
1	2	3	4	5
1.	Andhra Pradesh	Diploma in Fine Arts	4/5 Years	12th
2.	Bihar	Diploma in Fine Arts & Crafts	4 Years	12th
		Certificate in the above	—	10th
3.	Delhi	Diploma in Fine Arts	5 Years	10th
		Diploma in Basic Training	2 Years	12th
		Diploma in Teaching of Art Craft	2 Years	10th with Art, Drawing or Craft
4.	Gujarat	Diploma in Fine Arts	3 Years	12th
		B.A. Fine Arts	4 Years	12th
		M.A. Fine Arts	2 Years	B.A. (Fine Art)
		Certificate in Drawing Teacher	1 Year	SSC with Art
		Certificate Drawing	4 Years	VIII
		Elementary Painting	3 Years	Literate
5.	Haryana	Diploma in Drawing and Painting	5 Years	10th (second class)
		Master Certificate in Art	1 Year	10th (second class)

6.	Himachal Pradesh	Diploma in Drawing and Painting	5 Years	10th
7.	Kerala	Certificate in Clay Modelling Diploma in Drawing and Painting	4 Years 5 Years	VIII 10th
8.	Madhya Pradesh	Diploma in Fine Arts Post-Diploma in Fine Arts	5 Years 2 Years	10th Diploma in Fine Arts
		B A (Drawing and Painting) M A (Drawing and Painting)	3 Years 2 Years	SSC (Drawing) B A (Drawing and Painting)
9	Maharashtra	Diploma in Drawing and Painting Drawing Teachers' Certificate Certificate in Drawing Master Course	5 Years 1 Year 1 Year	SSC SSC DTC
10	Manipur	Certificate in Drawing and Painting Drawing Teachers' Certificate Course Diploma in Fine Arts B A (Fine Arts)	3 Years 1 Year 2 Years 1 Year	VIII SSC SSC Diploma in Arts
11.	Karnataka	Diploma in Drawing and Painting Drawing Teacher's Certificate Course	5 Years 1 Year	SSC with Drawing -do-

1	2	3	4	5
12.	Orissa	Diploma in Fine Arts and Crafts Diploma in Drawing and Painting	4 Years 2 Years	SSC Literate
13.	Punjab	Certificate in Arts and Crafts Teacher Diploma in Art and Craft Diploma in Drawing and Painting	2 Years 2 Years 4 Years	SSC with Drawing -do- SSC
14.	Rajasthan	Drawing (Pre-University) Diploma in Drawing and Painting Certificate in Painting, Clay Modelling, etc. M.A. in Drawing and Painting	1 Year 5 Years 5 Years 2 Years	SSC SSC SSC B.A. in the subject
15.	Tamil Nadu	Diploma in Painting B.A. (Fine Arts) M.A. (Fine Arts)	— 3 Years 2 Years	Pre-University -do- B.A. (Fine Arts)
16.	Uttar Pradesh	Post-Diploma in Fine Arts Diploma in Fine Arts Certificate in Clay Modelling Art Master's Training Certificate	1 Year 5 Years 3 Years 2 Years	Diploma in Fine Arts 12th Middle School SSC with Art

17. W B	B A (Drawing and Painting)	5 Years	-do-
	M A (Drawing and Painting)	2 Years	B A (Drawing & Painting)
	Diploma in Painting	2 Years	12th
	B.A (Fine Arts)	5 Years	SSC
	Diploma in Fine Art and Painting	5 Years	SSC
	Diploma in Visual Art and Painting	3 Years	SSC
	Certificate in Visual Art and Painting	2 Years	SSC
	Post-Diploma in Fine Art	1 Year	Diploma in Fine Art
	Certificate in Clay Modelling	2 Years	IV

II. Performing Arts. These arts are performed before an audience. The artists create, compose and adopt musical works and dances, create vocal and instrumental music; sing and direct music, conduct orchestra and play different types of instruments; originate and plan dances, direct dance recitals, perform dance in various Indian or Foreign forms.

Qualities Required. Performing ability, artistic ability, creative ability, ingenuity, imagination, form perception, manual and finger dexterity, motor coordination (movement of eye, hands, fingers and foot together), Precision, objectivity, business ability (for professional growth), physical requirement (presentable personality, suitable voice, agility etc).

Occupations. Dancer, choreographer, music composer, orchestra conductor, musician, singer.

Fields of Employment. These people can find jobs in academics, art centres, teaching institutions, studios, TV and Radio Stations, All India Radio, theatres, hotels, etc.

Training is offered in all these arts in the form of certificate, diploma and degree courses by various institutions. It is a long list and hence cannot be given even statewise. Candidates may like to find out from the original source about the details of these courses.

III. Dramatic Arts. Dramatic arts portray or interpret some facts, events or way of life in plays, radio presentations, TV presentations, or theatre presentations and films (motion pictures).

Qualities Required. Artistic ability, creativeness, imagination, ingenuity and resourcefulness, colour discrimination, form perception, spatial ability, manual/finger dexterity, visual memory, organising and managerial ability, acting ability, physical characteristics, etc.

Occupations. Director, Film Director, Studio Director, Stage Director/Producer, Music Director, Song Writer, Dance Director, Motion Picture Producer, Production Manager, Stage Manager, Cameraman, Cinematographer, Movie/Cine Cameraman, Actor, Actress, Extras, Promptor, Comedian, Clown, Buffoon, Juggler, Ventriloquist (imitating others), Mimics, Storywriter, Screen Play Writer, Script-writer, Film Editor, Commentator, Make-up-man, Lighting Technician, Sound Technician, Costume Designer, Stage Set Designer, Ward-robe Incharge, Property Manager, etc.

The following Institutions offer training in these arts :

Sl. No.	Institution	Course	Duration	Qualification
1.	Faculty of Fine Arts, Waltair University	Diploma in (i) Play Direction (ii) Acting (iii) Play Writing	2 Years 2 Years 2 Years	Degree 12th with aptitude. 12th with aptitude
2.	National School of Drama and Asian Theatre, Ravindra Bhawan, Delhi	Training in Acting and Pro- duction, Dramatic Literature, Theatre Technique	3 Years	SSC preference to graduates Acting experience in at least 10 plays etc.
3.	College of Indian Music, Dance and Dramatics, M S University, Baroda	Diploma in Dramatics	2 Years	SSC
4.	Film and TV Institute of India, Pune.	Diploma in (i) Screenplay Writing (ii) Film Direction (iii) Motion Picture Photo- graphy (iv) Film Acting	3 Years	(1) Graduate (2) Graduate (3) 12th in PCM or Degree/ Diploma in Fine Art (4) SSC with knowledge of Hindi, Urdu.
5.	Department of Speech and Drama, Punjabi University, Patiala	Junior Diploma in Dramatic Art	—	12th
6.	Ravindra Bharti University, Calcutta.	Junior Diploma in Music and Drama	2 Years	SSC with Art sub- jects

Some of the employing departments are Film Finance Corporation, Films Division, NCERT, Broadcasting and TV Department, National Theatre, the whole of film industry, etc.

IV. Commercial and Industrial Arts. Commercial art is an application of various art media to design and execute art works to promote sales of products, services to consumers. The sole aim is directed towards influencing public opinion. These arts create and execute eye-catching illustrations for advertisements, displays, books, bookjackets, magazines, posters, charts, containers labels, etc. It has also been extended to industrial fields to cover designing and artistically decorating and furnishing of interiors of homes, public buildings, shops, cinema houses. This is to meet the client's requirements.

Qualities Required. Artistic ability and judgment, creativeness, ingenuity, colour discrimination, form perception, special ability good visual memory, manual and finger dexterity, craftsmanship, good handwriting, ability to translate ideas into graphic form, ability to read abstract ideas/concepts, business ability, organizational and managerial ability and physical characteristics.

Occupations. Commercial Artist, Junior Artist, Illustrator, Sign-board Writer, Lettering Artist, Layoutman, Display/Advertising Artist, Art Director, Lithographic Artist, Photographic Artist, Tone Artist, Retouching Artist, Ceramic Artist, Topographical Artist, Industrial Designer, Textile Designer, Furniture Designer, Craft Designer, Interior Decorator and Designer, Window Display Designer/Dresser, Photographer, Dark Room/Studio Assistant, Portrait Photographer, Commercial Photographer, Industrial Photographer, News/Press Photographer, Aerial Photographer.

Fields of Employment Advertising agencies, Commercial art studios, printing houses, publishing houses, TV and Radio Studios, Government Publicity Departments, Field Publicity Department, Family Planning Departments, and there are several other public and private organizations.

There are a number of institutions. Hence statewise information is given in the following table.

Sl. No. 1	State 2	Course 3	Duration 4	Qualification 5
1.	A.P.	Diploma in Commercial Art	5 Years	SSC
2.	Delhi	National Diploma or Diploma in Commercial Art	5 Years	SSC
		Diploma in Graphic Commercial Art	3 Years	12th
		Commercial Art Course, Part-time	1 Year	12th
3.	Haryana	Diploma in Commercial Art	3 Years	SSC (2nd Class)
4.	Kerala	Diploma in Commercial Art	17 Months	VII
		Certificate in Commercial Art	2 Years	VII
5.	Maharashtra	Certificate in Commercial Art	1 Year	VII
		Diploma in Commercial Art	5 Years	SSC with Art
6.	Karnataka	Certificate in Commercial Art	6 Years	Literate
		Diploma in Applied Commercial Art	5 Years	SSC with Art
7.	Orissa	Certificate in Commercial Art	2 Years	Literate
8.	U.P.	Diploma in Commercial Art	—	SSC
		Post-Diploma in Commercial Art	—	Diploma in Commercial Art
9.	W.B.	Diploma in Commercial Art	—	SSC
Training Facilities in Industrial Art				
1.	Delhi	Certificate in Photography	3 Months	VIII
		Certificate in Photography	6 Months	VIII

1	2	3	4	5
		Interior Decoration and Textile Designer		
		Diploma in Interior Decoration	1 Year	12th
		Diploma in Applied Art	3 Years	SSC
2.	Gujarat	Post-Diploma in Applied Art	4 Years	VIII
		Diploma in Industrial Design	1 Year	Diploma in Applied Art
		P.G. Course in Product Design	5 Years	SSC
			2½ Years	B.E. (Mech. Elec.) Arch.
3.	Haryana	Diploma in Applied Art	5 Years	SSC (2nd Class)
		Diploma in Interior Decoration	3 Years	SSC
4.	M.P.	Diploma in Applied Art	5 Years	SSC with Art
		Diploma in Applied Art (Advanced)	2 Years	Diploma in Applied Art
5.	Maharashtra	Diploma in Applied Art	5 Years	SSC with Art
		Certificate in Photography	20 Months	SSC
6.	U.P.	B.A. (Household Work)	3 Years	12th
		M.A. (Household Work)	2 Years	B.A. (Household)
		Diploma in Applied Art	2 Years	12th
		Diploma in Photography	1 Year	Certificate in Photography
		Certificate in Photography	1 Year	12th
7.	W.B.	Diploma in Pottery Work	3 Years	VIII

CHAPTER 39

CAREERS IN COMPUTER/SCIENCE TECHNOLOGY

India's pride, mathematical wizard, supermathematical brain or call it by any name of equal density, Shrimati Shakuntala Devi does mathematical works of additions, subtractions, multiplications, divisions and other operations in a fraction of a second where not only a normal single person but thousands of them might work for days together. Shakuntala Devi is definitely endowed by the Nature in this regard, but at the same time her devotion, application, tenacity, labour and enthusiasm contributed tremendously to lead her to the position she is enjoying today. The Nature's creation, of course, is supreme. Such persons rarely appear, once in a while in centuries like the comets which are unusual phenomena.

However, man's efforts to conquer the unknown, mystic, difficult horizons made it possible to create such a device which can equal or surpass Shakuntala Devi's feats. This is a very guarded statement we are making here because as per the claims once declare by her on a T.V. screen that the most difficult sum involving many digits was answered by her in 59 seconds whereas the computer took 62 seconds, 3 seconds more than what she required. But the truth remains that we cannot multiply Shakuntala Devi's, but certainly we can multiply her shadows *i.e.* computer devices.

Computer, after all, is a product of human brain itself. Can we call it an irony of fate or something like that when we witness the product of human brain shadowing the very human brain itself. Perhaps, this would never be answered as we do not find answer to the old question-first what? Egg or hen? All said and done, the creation of human brain though laudable, no less laudable is the human brain. Thus, we can fancy that human brain is supreme, to put the things straight.

Computer science and technology are comparatively new and emerging fields/disciplines attracting many interests. It may well be accepted that the range of computer applicability is widening fast. Computers are being made use of in a variety of fields as administration, agriculture, banks, research work, education, industries, transportation, communication, insurance, income tax, accounts, defence establishments, space technology and others. Because of this there is an increasing demand for qualified and trained personnel to carry research, designs, development and maintenance of computer hardware and software. This offers a good number and a variety of job opportunities in the information world.

The galloping development of electronic computers has profoundly influenced industrialised societies of the world and their impact is being felt in developing countries because of their superhuman qualities. The computer can solve a problem with an unimaginable speed and with exact accuracy, but only when the method of solution is made known to it. That is, they must be told how to do a job. As any other machine, computers have no creative abilities, sensitivities, feelings or thought process as human beings have. However, storage of data, their manipulation, speed and accuracy in performing operations is unusually high.

Computers are used to solve industrial, commercial, social and Governmental problems in addition to scientific research. Therefore, data processing industry has come up whose main purpose is to satisfy end users

These needs of users through computer science have created thousands of challenging and satisfying job opportunities. Even though this science is in its initial stages in India, it has provided job opportunities to 40000 people. With a stress that has been laid by our Prime Minister, Mr. Rajiv Gandhi on adoption of computer technology, there is a likelihood of further increase at a faster rate in job opportunities. This can be visualised in the assessment made by the Working Group for the 7th Five Year Plan. It estimates that our country will require 250 doctorate degree holders, 6000 M. Techs., 6000 B. Tech., 8000 MCA, 40000 DCA, 3000 DCF, 20000 operators and 40000 Data Preparation Assistants. To meet this need it is also proposed to increase the number of institutions by more than 300 with an outlay of Rs. 269 millions by the Department of Electronics with an additional provisions of teaching staff, new schemes, development of computer aided instructional materials.

Because of such modern technology the areas of employment are gradually being shifted from clerical to computer oriented jobs.

Training. Facilities of training in computer science/technology have been introduced in many Indian Universities and Technological Institutions. The level of studies in these institutions covers from certificate courses to doctorate degree courses. We often see attractive advertisements of institutions claiming to train persons in this science and technology. However, one must observe extreme circumspection in selecting such private tutorial classes because of repercussions that would follow. People should check their authenticity and recognition of qualification they award for employment purposes. An attempt has been made to give relevant information about training in computer science and technology. In addition to universities/institutes there are 20 ITI's which train craftsman level personnel computer technology.

University/Institutions Offering Education and Training in Computer Science Technology:

Sl. No.	Institutions/Universities	Course	Subject	Qualification for Admission	Duration
1.	Aligarh Muslim University, Aligarh	Diploma	Computer Science	B.Sc. + M.Sc. First Division with Physics and Maths or B.E.	1 Year
2.	Aligarh Muslim University, Aligarh	Diploma	Punch Card and Machine Operation	Degree	1 Year
3.	Birla Institute of Technology and Science, Pilani	Post-Graduation	Computer Science	12th Class with Physics Chemistry and Maths	4 Years
4.	University of Bombay, Bombay	Diploma	Computer Management	Degree, Experienced candidates preferred	1 Year
5.	University of Bombay, Bombay	M.Sc.	Computer Science	B.Sc. with Math or Physics or B.E.	2 Years
6.	College of Engineering, Guindy, Madras	M.E.	Computer Science	B.E.; B.Tech. or M.Sc. with Maths or Physics	2 Years
7.	Gujarat University, Ahmedabad	Certificate	Computer Programming	Degree in 2nd Class	6 Months
8.	Indian Institute of Management, Calcutta	Fellowship Ph.D.	Operations Management Research, System Analysis	Master's Degree in relevant discipline with 55% or B.E. (1st Class)	3 to 4 Years

<i>Sl.No.</i>	<i>Institutions/Universities</i>	<i>Course</i>	<i>Subject</i>	<i>Qualification for Admission</i>	<i>Duration</i>
9.	Indian Institute of Science, Bangalore	M.E.	Computer Science	B.E. (2nd Class), B.Sc. + AMIE with three years' experience	2 Years
10.	Indian Institute of Technology, Powai, Bombay	M.Tech.	Computer Science	B.E. or 1st Class M.Sc. in Maths or Physics	2 Years
11.	Indian Institute of Technology, Powai, Bombay	B. Tech.	Computer Science	12th with Maths, Physics and Chemistry	4 Years
12.	-do-	Diploma	-do-	Sponsored candidates	—
13.	Indian Institute of Technology	M Tech	-do-	B.Tech. or M.Sc.	2 Years (FT) 3 Years (PT)
14.	-do-	M.Tech.	Computer Technology	-do-	-do-
15.	-do-	Ph.D	-do-	—	—
16.	Indian Statistical Institute, Calcutta	M.Tech	Computer Science	B Tech., B.E.	2 Years
17.	-do-	Operation of Data Machines	-	Degree in Maths, Typing 30 w.p.m.	4 Years
18.	-do-	Certificate	Computer Programming	Degree in Maths, & engaged in research work	3 Months
19.	-do-	Ph.D. Science	Computer Science	—	—

20.	Indian Institute of Technology, Madras	M.Tech. M.Sc.	-do-	B.E. or Ist Class Master's Degree in Maths/Stats.	2 Years
21.	Indian Agricultural Statistical Research Institute, New Delhi	Diploma	Advance Computer Programming	M.Sc. (Agri/Stats/Maths/Physics/Agri. Physics/Tech, Engg.)	2 Years
22.	Indian Institute of Technology, Kharagpur	-do-	Computer Programming	B.Tech. in Computer Science & Technology	1 Year
23.	-do-	B Tech.	Computer Science and Technology	12th with Physics, Chemistry, Maths	4 Years
24.	Indian Institute of Technology, Kanpur	M.Tech. & Ph.D.	Computer Science	B E (1st Class), M.Sc. (1st Class) in Physics, Chemistry or Maths	M.Tech. (2 Years) Ph.D. (3 Years)
25.	Jadavpur University, Calcutta	Diploma	-do-	B.E. (1st Class), M.Sc. Physics, Chemistry, Maths with 55%	1 Year
26.	Jawaharlal Nehru University, New Delhi	M.Phil. Ph.D.	-do-	B.E. (2nd Class) in related subjects	—
27.	Motilal Nehru Regional Engg. College, Allahabad	Certificate	FORTRAN, COBAL, Basic Language	Degree preferably with Maths or B.E /Diploma in Engg.	1 Month

<i>Sl. No.</i>	<i>Institutions/Universities</i>	<i>Course</i>	<i>Subject</i>	<i>Qualification for Admission</i>	<i>Duration</i>
28.	Motilal Nehru Regional Eng., College, Allahabad	Diploma	Computer Science	M.Sc. (Physics) with specialization in Electronics (Solid State Physics) or B.E. (Electrical/Electronics, Communication)	1 Year
29.	-do-	-do-	-do-	-do-	1 Year
30.	-do-	M.E./M.Tech.	-do-	Post-Graduate (Computer Science & Technology)	1 Year
31.	Tata Institute of Fundamental Research, Bombay	Ph D.	Computer Science & Solid State Electronics	M.Sc. (Physics), Master's Degree in Technology or Engg. with Computer Science	—
32.	University of Calcutta, Calcutta	Diploma	Computer Engineering	—	1 Year
33.	University of Delhi, Delhi	Master's Degree	Computer Application	—	3 Years
34.	The Computer Centre, BHU, Varanasi	Certificate	Computer Programming	—	4 Years

In-Service facilities These facilities are available in the following establishments with a further facility of employment

Sl. No.	Employer	Eligibility	Duration
1.	Voltas Ltd., Bombay	B E (First Class) in Industrial Engineering Computer Science	18 Months
2.	Tata Consultancy Services, Bombay	M Sc (Computers Science Physics Maths Stats)	2 Years
3.	Computer Maintenance Corporation Ltd, Bombay	B E preferably in Electronics/Communication Electronic	2 Years
4.	Datamatics Corporation Ltd, Bombay	Graduate Post-Graduate (First Class) in Commerce/Science or Engineering.	3 Years
5.	India Institute of Technology, Kanpur	B Tech M Sc (Maths Physics/Statistics/Chemistry) having Maths at B Sc	2 Years
6.	Hindustan Computers Ltd, Madras	B Sc and M Sc (1st Class)	4 Years
7.	Shri Rayalaseema Paper Mills Ltd, Karnool, A P	B E (1st Class)/B Sc (Maths/Stats)	1 Year
8.	Wipro Products Ltd, Biktawar, Bomba	B E. Electrical or Electronics and should have completed programming	1 Year
9.	International Computers, Indian Manufacturer Ltd, Bombay	Degree in Electrical/Electronics Engineering One/ two years' experience in computer field.	1 or 2 Years
10.	Oil and Natural Gas Commission, Dehradun	1st class degree in Mech/Chem/Electrical/Civil/Instrumentation/Mining/Computer Science	1 Year
11.	Steel Authority of India Ltd, Bokaro Steel Plant, Bokaro	B E / M Sc. (Stats) MBA/P G in Computer Science/Chartered Accountancy,	1 Year

Computer Personnel. There is and will be a need for young men and women in the data processing industry than what was before. Highly qualified engineers, programmers, keypunch operators and computer operators will be required in large numbers. They will be required for manufacturing of computers as well as users of them. Such services are the product of skills and efforts of score of men and women. In manufacturing unit these people work to design, produce, implement, sell or service the system. Others are employed by computer users where they analyse a job, translate it into a language, write programmes, etc.

Some of the positions are highly technical. However, howsoever a person might be qualified he has to do a certain amount of in-service or on-the-job training.

Broad Fields of Employment for Computer Personnel. (1) Manufacturers employ these scientists to carry research to develop new materials and techniques. These research workers work in laboratories where they enjoy considerable freedom and explore promising scientific ideas. So positions in manufacturing units are Researcher, Product Engineer, Systems Development Engineer, Product Test Engineer. Other scientists like Electrical, Mechanical and Industrial Engineer, Chemist, Metallurgist, Physicist and Mathematician are also employed in manufacture of computers.

(2) *Sales.* Manufactured computers have to be sold. Some people are engaged by computer manufacturers to sell computers who are called selling computers. Data processing systems are not sold off the show-room floor'. In majority of cases a computer is tailored to the needs of the users. These may also be called Sales Representatives.

Systems Engineers provide technical knowledge to solve a wide range of business and scientific problems. They discuss problems with customers, determine what machines are needed to get desired results. Systems Engineers should possess logical ability to analyse problems and develop solutions. Field engineers instal and maintain computers in customers' offices.

(3) *Programming.* The most talked of career in data processing is the job of a programmer. A programmer writes instructions enabling a computer to perform a particular job. A computer starts with a statement of a problem, studies and analyses it and then organises the information into a step by step procedure which becomes a programme for the computer.

(4) There are numerous jobs in data processing fields which require diploma qualification or certificate qualification. They are Key-Punch Operator, Operators of Type-writing Machines or Book-keeping Machines, Console Operators, etc. There are also administrative jobs like Librarian, Machine Assistants, etc.

Employment Opportunities. A talk about computerization and automation raises fears and suspicions of retrenchment of employees or reducing staff strength. However, such fears are baseless. In large establishments employees have to clear a large volume of work instantly which requires quicker methods of obtaining results. Defence Forces, Space Research, Railways, State and Central Government, Statistical bureaux, Banks, Census organisation, National Sample Survey Department, Insurance Companies, Universities, Municipal Corporations, Air Transport, Communications Department, Electricity Department, Power Distribution Companies, Scientific Laboratories, etc do require quicker methods and hence, adoption of computer technology is a must.

Appointments to various positions are made through advertising posts or notifying them to the Employment Exchanges.

Below given are two lists. One gives various types of job opportunities and the other employing authorities.

Various Positions in Computer Science Field Data Processing Manager, Systems Analyst, Programmer, Software Engineer, Programming Officer, Incharge Computer Centre, Senior Programmer, Systems Analyst-cum-Programmer, Additional Manager Dy. Manager, Senior Engineer, Engineer, Systems Officer, Computer Operations Officer, Scientific Officer, Senior Technical Assistant, Operations Manager, Data Processing Officer, Computer Operator, Computer Programmer-cum-Operator, Programme Analyst, Production Quality Assurance Engineer, Computer Engineer, Marketing Executive, Systems Executive, Sales Personnel, Assistant Electronics Data Processing Manager, Systems Programmer, Statistical Analyst, Data Entry Operator, Senior Systems Analyst, Junior Executive, Console Operator, Systems Specialist, Input Output Assistant, Key-Punch Operator, Manager, Computer Professional (Software), Electronics Data Processing Superintendent, etc.

Various Organizations Employing Computer Personnel

(1) *Government* Madras Fertilizers Ltd, Madras, Indequip Engineering Ltd, Ahmedabad, Oil India Ltd, Assam, Industrial Management Services, Hyderabad, Scooters India Ltd, Lucknow, Physical Research Laboratory, Ahmedabad, Bharat Petroleum Corporation Ltd, Bombay, Sardar Patel University, Vallabh Vidyanagar, Hindustan Copper Ltd, Calcutta, All India Technical and Electronic Services, New Delhi, Punjab State Electricity Board, Bhatinda, Instrumentation Ltd, Kota, Indian Oil Corporation Ltd, New Delhi, Hindustan Petroleum Corporation Ltd, Bombay; Indian Institute of Sciences, Bangalore, National Thermal Power Corporation Ltd, Shaktinagar, UP; Indian Institute of Technology, Kanpur and Kharagpur, Central Drug Research Institute, Lucknow, Institute of Research in Medical Services, New Delhi; State Bank of India,

Bombay; Directorate of Economic and Statistical Services Jaipur; Engineers India Ltd, New Delhi; Industrial Development Authority, Ghaziabad.

(2) *Private.* C R & D Co (India) Private Ltd, Calcutta; DCM Data Products, New Delhi; Wipro Products Ltd, Bombay; UPTRON, Lucknow; Voltas Ltd Bombay; Imperial Hotel, New Delhi; GEC of India Ltd, Calcutta; Blue Star Ltd, New Delhi; Creative Marketing Consultants Services Pvt. Ltd, Bombay; Electronics Research and Development Centre, Trivandrum; Escorts Ltd, Haryana; The K.K.L. Ltd, Bombay; Orient Business Consultants Pvt. Ltd, Bhopal; Shri Rayalseema Paper Mills Ltd, A.P.; Ashoka Leyland Ltd, Grindlays Centre, Madras; Tata Consultancy Services, Bombay; Computer Maintenance Corporation Ltd, Bombay; U.P. State Textile Corporation Ltd, and Spinning Mills Co. Ltd, Kanpur; Tata Yodogawa Ltd; Computer Centre, Jamshedpur; Gurumukh Singh and Sons Auto Parts Pvt. Ltd, Ludhiana; Milk Food Ltd, 9, Nehru Place, New Delhi; Hyderabad Asbestos Cement Product Ltd, Haryana; K.K.C.M. Premises, Kalpi Road, Kanpur.

CHAPTER 40

CAREERS IN RAILWAYS

Indian Railways are the nation's largest single undertaking having a route length of rail network well over 61600 kilometres including all types of rail tracks *i.e.*, broad gauge, metre gauge, and narrow gauge of which broad gauge accounts for 53%. The steam traction, uptill now, was the principal mode of locomotion, however, diesel and electric tractions replace it in a phased manner. Railways take major responsibility of transport of passenger traffic and goods traffic and people's first choice goes to it because it proves them the cheapest mode. It is explicit in figures that during 1984-85 railway passenger traffic was approximately 1700 million passengers which is nearly three times the population of the country. This single fact reveals the importance and utility of the railways as the passengers' convenient mode of transport.

Indian Railways have expanded progressively over the years providing quick transportation services for millions of people. Compared to its size Indian Railways stand largest in Asia and second largest in the world under a single management next to USSR Railways.

One may be amazed as to how can such a large organization be managed to provide uninterrupted services to its passengers daily who account for one percent of the entire Indian population. However, a look at its administrative set up can remove such doubts.

The responsibility for the administration and management of the Indian Railways rests with the Railway Board which functions directly under the charge of the Railway Minister. The Board is responsible for regulation, construction, maintenance, operations of the railways. The whole system of the railways has been divided into nine zones under Zonal Administration. They are given below with their places of Headquarters.

Southern Railway (Madras), Central Railway (Bombay), Western Railway (Bombay), Northern Railway (New Delhi), North-Eastern Railway (Gorakhpur), Eastern Railway (Calcutta), South-Eastern Railway (Calcutta), North-East Frontier Railway (Gauhati), South-Central Railway (Secunderabad). Each zone is headed by a General Manager who is responsible for operation, maintenance and finances of their respective zonal railways. General Managers are assisted by functional heads of departments at the Headquarters and Divisional Superintendents in the field. The various departments under each zone are civil engineering, mechanical engineering, commercial, transportation, accounts, stores, signals, communications, electrical, medical personnel and protection force.

Under each zone there are two levels as divisional and district systems. Each division is divided into its territorial units which function under Divisional Superintendents who are assisted by divisional officers. Under district system district officers are responsible for running and maintaining the Railways.

Apart from the set-up given above there are other units attached to the Railways such as Research Designs and Standard Organization (Lucknow) with sub-stations at Lonawala and Chittaranjan, Railway Liaison Office for keeping liaison with DGS & D (Directorate General of Supplies and Disposal) for materials required by the Railways. In addition, there are subordinate offices such as Railway Staff College, Railway Rates Tribunal, Railway Recruitment Boards, Production Units as Chittaranjan Locomotive Works, Integral Coach Factory, Diesel Locomotive Works, etc.

Employment—More than 46.2% of the Central Government employees are in the Railways providing round the clock services to its commuters. Railways provide jobs for all types of persons—men and women, semi-literates, literates, highly educated and professionally and technically trained persons. The actual number of employees as on 31st March 1982 stands to 1574980 of which 11314 belonged to gazetted cadres.

Training—Such a large organization employing a major chunk of employees invariably needs trained hands for maintaining punctuality, safety and efficient services to its customers. In order to train railway staff in various skills and trades training facilities are available in its institutes located at various places. The courses conducted by these training institutes are divided into 4 categories as (1) Initial Training to meet needs of new recruits, (2) Promotion Courses for supervisory employees who have been promoted, (3) Refresher Courses for middle and senior level railway officers, and (4) Special and Short-duration Courses to meet specific needs. The institutes which provide training to various types of railway employees are mentioned below:

(1) Railway Staff College, Baroda for training of gazetted officers.

(2) The Indian Railway Institute of Signal Engineering and Telecommunication, Secunderabad to train telecommunication engineers.

(3) The Indian Railway Institute of Advanced Tract Technology, Pune to train civil engineers.

(4) The Indian Railway Institute of Mechanical and Electrical Engineering, Jamalpur for training apprentice officers.

Recruitment Practices—Recruitment to various cadres and groups of posts in the Railways is done through various sources mentioned below:

(1) *Union Public Service Commission, New Delhi*—Open competitions are conducted for recruitment to all superior posts and services such as Indian Railway Accounts Service, Indian Railway Traffic Service, Indian Railway Service of Engineers, Indian Railway Service of Electrical Engineers, Indian Railway Service of Signal Engineers, Indian Railway Service of Mechanical Engineers and Special Class Railway Apprentices. It also conducts Assistants' Grade Examination. Medical Officers are recruited by the Commission by selection method.

(2) *Staff Selection Commission*—It recruits lower division clerks.

(3) *Various Recruitment Boards*—Railways have constituted various Railway Recruitment Boards for recruiting group 'C' staff through competitive tests/interviews.

(4) *Divisional Head Quarters—District Offices, workshops, locosheds etc.* recruit group 'D' staff and work-charged staff. Details of recruitment have been given separately.

Occupational Opportunities in the Railways—As said earlier, there are various types of occupational opportunities for young people in the Indian Railways under its various departments. The following table indicates departments and occupational opportunities available in them.

<i>Sl. Department No.</i>	<i>Occupational Opportunities</i>
1. Transportation Department (Traffic)	Assistant Station Master, Signaller, Station Master, Guard, Traffic Apprentices, Train Clerks; etc.
2. Transportation Department (Commercial)	Ticket Collector, Commercial Clerk, Commercial Apprentice, Law Assistant, etc.
3. Transportation Department (Power)	Driver, Cleaner, Fireman, Shunter, Assistant Driver (Electric Service), Diesel Driver, Maintenance Staff, etc.
4. Mechanical Engineering Department	Trade Apprentice, Apprentice Mechanic, Apprentice Train Examiner, Unskilled Staff.
5. Engineering Department (Civil, Electrical, Mechanical, and Signal & Telecommunication)	Drawing Office Staff, viz Tracer, Draughtsman, Chemical, Metallurgical and Laboratory Staff viz. Chemist, Metallurgist, etc.

- | | |
|---|---|
| 6. Civil Engineering Department | Permanent Way Staff <i>viz</i> Mistry, Assistant Permanent Way Inspector, Permanent Way Inspector Grades III, II & I, Works Staff Apprentice, Assistant Inspector of Works, Inspector of Works (Grade III, II & I), Bridge Inspector, etc. |
| 7. Signal and Telecommunication Department | Assissant Signal/Block Inspector, Assistant Telecommunication Inspector, Signal/Block Maintainer (Electrical, Mechanical), Signal Maintanancer, Telecommunication/Wireless Maintainer, Wireless Operator/Mechanic, Teleprinter Mechanic, etc. |
| 8. Stores Department | Store-keeper, Staff in the Printing Press (Junior Reader, Proof Reader, Junior Roller Caster, Monocaster, Junior Fitter, Mechanic, Chargeman, Foreman), etc. |
| 9. Medical Department | Sanitary Inspector, Nurse, Matron, Midwife, Pharmacist, etc. |
| 10. Railway Schools | Head Master/Mistress, Principal, Lecturer, Teacher, Assistant Teacher, Language Teacher, Drawing Teacher, Physical Education Inspector, Domestic Science Teacher, Demonstrator, etc. |
| 11. Ministerial Staff (common to all Departments) | Clerk, Shroff, Pay Clerk, Stock Verifier, Office Clerk, Typist, Stenographer, etc. |

Railways have built up their industrial base and developed its production capacity to meet the wide and varying needs of the railway system. These production units are:

(1) *Chittaranjan Locomotive Works, Chittaranjan, Calcutta*—It produces steam, electric and diesel locomotives.

(2) *Diesel Locomotive Works, Varanasi*—It produces diesel locomotives.

(3) *Integral Coach Factory, Perambur (Madras)*—It manufactures passenger coaches for Indian Railways and is one of the biggest coach manufacturing factories in the world.

All the three production units have been equipped with elaborate training facilities for workmen.

Employment Prospects During the Seventh Plan. The 7th Five-year Plan document indirectly suggests that the total employment

in the Railways would be increased by 5.5 lakh by 1990. Since it has been assumed that the freight traffic carrying capacity would be increased from 275 (1985) to 340 million tonnes and annual growth rate of 2% in passenger traffic, it can be worked out of a requirement of additional manpower that would be required by the railways even though status quo is maintained (by not taking cognizance of retiring workers) and investment in infrastructure has already been made. This is just a rough calculation which perhaps, will drive young people to seek employment in the Railways.

Besides wage-paid employment in the Railways, there are a good many opportunities of self-employment. Looking to the trend towards self-employment in the recent years, Railways have come forward to help educated young people to take self-employment in various forms in the railways. They are setting up of bookstalls on the important Railway stations, allotting civil engineering works to contractors, giving vending contracts and setting up of Railway City Booking Out Agencies. Young people may like to have such opportunities of self-employment in the Railways.

Recruitment Procedure—Railways require a huge number of Class III and workshop and Artizan staff. To recruit required people under different Zonal Railways, Railway Authorities have constituted Railway Recruitment Boards by grouping certain Zonal Railways under one Railway Recruitment Board. They are shown below:

<i>Sl. No.</i>	<i>Name of the Board</i>	<i>Recruits for</i>
1.	Railway Recruitment Board, Allahabad.	Northern Railway, Diesel Locomotive Works, Varanasi.
2.	Railway Recruitment Board, Bombay.	Western Railway, Central Railway, South Central Railway.
3.	Railway Recruitment Board, Calcutta.	Eastern Railway, South Eastern Railway, Chittaranjan Locomotive Works, Railway Electrification.
4.	Railway Recruitment Board, Madras.	Southern Railway, South-Central Railway, Integral Coach Factory, Perambur.
5.	Railway Recruitment Board, Muzaffarpur.	North-Eastern Railway.
6.	Recruitment Committee, Railway Board Administration.	North-Frontier Railway.

Educational Qualifications and other requirements for recruitment of Class III Technical and Non-Technical Staff are:

<i>Sl. No.</i>	<i>Post</i>	<i>Qualification</i>	<i>Age</i>
1.	Signaller	SSC	18-25
2.	Assistant Station Master	SSC	18-21
3.	Guard	SSC	18-25
4.	Train Clerk	SSC	18-21
5.	Ticket Collector	SSC	18-21
6.	Commercial Clerk	SSC	18-21
7.	Commercial Apprentices	Degree with Law Graduate	20-24
8.	Law Assistant	LLB with 5 Years Experience at Bar	up to 30
9.	Engine Cleaner	Middle School	—
10.	Trainee Fireman	SSC	—
11.	Cleaner	Literate	—
12.	Fireman	SSC	16-20
13.	Assitant Driver	SSC	17-21
14.	Diesel Cleaner and Maintenance Staff	Middle School	18-25
15.	Apprentice Mechanic	SSC	15-19
16.	Apprentice Train Examiner	SSC	15-19
17.	Tracer	SSC	15-25
18.	Assistant Draughtsman	SSC with Diploma in Draughtsman	26-30
19.	Draughtsman B	SSC with Diploma in Draughtsman	26-30
20.	Head Draughtsman	Degree in Civil Engg.	20-30
21.	Assistant Permanent Way Inspector	SSC in PCM or Diploma in Civil Engg.	18-28
22.	Apprentice Assistant Inspector of Works	Diploma in Engineering	18-28
23.	Inspector of Works	B.E. (Civil)	20-30
24.	Surveyor	DCE	"
25.	Assistant Surveyor	"	"
26.	Assistant Bridge Inspector	SSC with Sc and Maths DCE/DME	16-19 18-28
27.	Head/Senior/ S.Man/ Jig and Tool Designer	B.E.	20-30

<i>Sl. No.</i>	<i>Post</i>	<i>Qualification</i>	<i>Age</i>
28.	Tracer	From amongst trade apprentices	—
29.	Assistant Signal/Block Inspector	12th with P & M	16-19
30.	„ „	DME/DEE	—
31.	Signal/Block Inspector Gr-III	B.E.	20-30
32.	Asstt. Telecommunication Inspector	SCC with Diploma in wireless operator or B.Sc.	18-28
33.	Telecommunication Engineer	B.E.	20-30
34.	Signal/Block Maintainer Electrical	SCC+Diploma in Electrical or Mechanical Engineering	18-22
35.	Signal Maintainer Mechanical	Middle School+3 Years Exp.	18-25
36.	Wireless Mechanic	„	„
37.	Wireless Operator	SCC+Proficiency in Morse Telegraphy	„
38.	Store Keeper	SCC with English and Book Keeping	18-21
39.	Chargeman III	SCC+Diploma/Certificate in Printing+ Practical Experience	Below 28
40.	Chargeman II	SCC+DME+ 2 Years Exp.	Below 30
41.	Monokey Board Operator	SCC+2 Years Exp.	„
42.	Junior Reader	SSC+1 Year Exp. in Proof Reading	Below 25
43.	Mono Caster	Literate+2 Years Exp.	—
44.	Composer	„	Below 25
45.	Machineman	„	„
46.	Binder	„	„
47.	Junior Machine-man	Literate+Conversant with work	Below 25
48.	Stereotyper	Literate+2 Years Exp. in Printing	„

<i>Sl. No.</i>	<i>Post</i>	<i>Qualification</i>	<i>Age</i>
49.	Sanitary Inspector	SSC+Diploma in Sanitation	„
50.	Staff Nurse	SSC+Certificate in Nursing	20-25
51.	Nursing Sister	SSC+Certificate in Nursing, B.Sc. (Nursing)	„
52.	Matron/Sister incharge	Diploma in General Nursing	45 Years
53.	Midwives	Diploma in Midwifery	—
54.	Pharmacist	Certificate/Diploma in Pharmacy	20-30
55.	All Types of Teachers	Teaching qualifications	
56.	All Types of Clerks	As applicable	

Apprentices are engaged in the Railways as per the Apprenticeship Act, 1961. All conditions are the same.

Recruitment to the Railways through Competitive Examinations

Sl No	Name of the Service	Qualification	Age	Authority	Subjects of Examination
1	Indian Railway Accounts Service Class I and Indian Railway Traffic Service	Degree	21-28	UPSC	(1) Essay+(2) General Knowledge + (3) General English + Any three subjects from amongst the list of subjects
2.	Indian Railway Service of Engineers	B E	20-25	"	(1) English+(2) General Knowledge + (3) 2 Optional subject out of a given list.
3.	Indian Railway Stores Service	"	"	"	"
4.	Indian Railway Service of Mechanical Engineers	"	"	"	"
5.	Indian Railway Service of Signal Engineers	"	"	"	"
6.	Indian Railway Service of Electrical Engineering	"	"	"	"
7.	Special Class Railway Apprentices Examination	12th with Mathematics + Physics or Chemistry, Degree with Mathematics	16-19	"	(1) English. (2) Science and General Knowledge. (3) Maths.

<i>Sl. No.</i>	<i>Name of the Service</i>	<i>Qualification</i>	<i>Age</i>	<i>Authority</i>	<i>Subjects of Examination</i>
8.	Assistants of the Railway Board Secretariat Service	Degree	20-25	UPSC	(1) Essay (2) General Knowledge, (3) Arithmetic, (4) General Knowledge with Geography of India.
9.	Railway Board Secretariat Stenographer Service (Gr. II)	SCC	18-25	"	(1) English, (2) General Knowledge, (3) Shorthand/Typing test.
10.	Railway Board Secretariat Stenographer Service (Gr. III)	"	"	"	"
11.	Stenographers' Gr. III Limited Departmental Comp. Examination	LDC or UDC with three years exp.	—	"	"
12.	Clerical Grade Exam.	SCC	18-25	Staff Selection Commission	(1) General English and Short Essay+(2) General Knowledge including Geography of India and Typing test.
13.	LDC—Limited Deptt. Comp. Examination	"	Below 40 Years	"	"
14.	UDC—Limited Deptt. Comp. Examination	Any LDC having 5 years service	Below 45 Years	"	(1) Essay and Precise, (2) Noting and Drafting and Office Procedure, (3) General Knowledge.

CHAPTER 41

CAREERS IN AIR TRANSPORT

The wheels of progress that of rail and road have contributed to the national economy. It is further boosted by acquiring wings to it to accelerate the speed through Air Transport Industry. This industry plays a significant role in bringing about prosperity to the nation through its expanding fleet of Jumbos, Boeings, Air Buses and other aircrafts. This industry now operates in three organisations, *i.e.* Air India International for overseas flights, Indian Airlines for domestic flights and now recently added Vayudoot service for linking up small towns in the country.

Because of this industry the boundries of the world are shrinking fast. Where other modes of transport take days together to reach a certain place, air travel makes it possible in a matter of hours only. So far India is concerned the air transport industry operates through its organs as mentioned below:

(1) The International Airports Authority of India (IAAI)—This Authority was established in 1972 with Headquarters at New Delhi to develop, manage and control international airports of Bombay, Delhi, Calcutta and Madras on commercial basis. The task of this organisation is to arrange for smoother and more efficient service for passengers, cargo and landing facilities for various types of aircrafts.

(2) Research and Development Institute—This institute is concerned with design and airworthiness of civil aircrafts and equipments, aircraft performance testing, development of indigenous aircraft material, design and manufacture of proto-type of gliders and light training aircrafts, selection of suitable aircraft for civil operations and safety in air operations. Hindustan Aeronautics Ltd. is the main manufacturing unit which provides ample opportunities to people of various skills.

(3) Electronic Unit —The highly developed electronic units and instrument landing systems hold a very crucial position in the industry. Receiving and relaying information from ground to airborne aircraft is the main duty of these units.

(4) The Indian Meteorological Department—This department provides weather services. It issues warnings against heavy rainfall, strong winds and cyclonic storms for the use of the general public, defence services, shipping ports, fishing crafts, mountaineering expeditions, agriculturists as also air transport industry.

(5) Directorate General of Civil Aviation.—This department is responsible for air traffic control and aeronautical communication

service to civil air transport, formulation of air transport regulations including safety requirements, investigation of air accidents, and construction and maintenance of terminal buildings, runways, etc. of the civil aerodromes.

(6) Institute of Aviation Medicine—This institute imparts training and affords facilities for research in various fields of medicine. It is closely associated with the aircraft industry in the design and development of indigenous aircraft. Moreover, operational problems of Air Force and Civil Aviation are referred to it. It conducts an advance course in Aviation Medicine. Graduates of this course are fully competent to deal with the aero medical problems of aircraft, design, military and civil flying.

The Medical Evaluation Centre of this Institute assesses the fitness of aircrew to fly modern high performance aircrafts

(7) Aeroclub of India—This club organises flying clubs and arouses sufficient interest in the country about aerial developments among people. It also organises sports, training of pilots and holding examination for aircraft maintenance engineers at four big cities in India. It issues proficiency certificates in gliding, silver and gold badges and diamond pins.

Training—A majority of trained and skilled personnel required by the Civil Aviation Industry is prepared by the Universities and Special technical and technological as well as professional institutions. Personnel specific to the industry like Pilots, Navigators, Air Hostesses are issued licenses, competency and proficiency certificates by DGCA (Directorate General Civil Aviation). There are no regular institutions which can turn out required and skilled personnel for the industry. However, those already professionally and technically trained people are recruited and given in-service training in the institutes of the industry. This has been given in a table at the end of the chapter. However, candidates should have to acquire basic qualification from outside the industry to enter into it. The industry only provides in-service training after the persons have been recruited.

There are a variety of occupational opportunities in the industry with better service conditions compared to other industries. A list of such occupational opportunities with relevant information is given in a table at the end of the chapter. Also given is a list of Flying Clubs (places) so as to enable candidates to contact them for further details.

The mode of recruitment in the industry is inviting applications through press advertisements or through Employment Exchanges.

There is a wide scope of employment for those people who like to have adventurous life, possess enough initiative and want to have new experiences. they may also try if they can.

Direct recruitment to the posts in Directorate General of Civil Aviation.

<i>Sl. No.</i>	<i>Post</i>	<i>Age</i>	<i>Qualifications</i>
1.	Chief Inspector of Flying	45 Years	Current Pilot's 'B' License, Exp. as commander of an aircraft with more than two engines to be not less than 3000 hrs.
2.	Inspector of Flying	-do-	Current Pilot's, License, Exp. as Pilot's in Command of at least 3000 hrs. Current Pilot's/Instructor's License or Flight Instructor Rating—Flying 1000 hrs.
3.	Dy. Director (Flight Crew Standards)	-do-	Degree+5 Years Exp. in operation.
4.	Dy Director (Air Safety)	-do-	10 Years Exp. in Aeronautical Engg. others as above
5.	Dy. Director (R&D)	-do-	Master's Degree in Maths or Physics+ Degree or Diploma in Aeronautical/Mech. Engg + 5 Years Exp.
6.	Chief Engineer (ATC All-India)	-do-	Degree in Science with Physics & Maths+Diploma in Aeronautical/Electrical Engg.+5 Years Exp. (Air Craft).
7.	Asstt. Director (Maps & Charts)	-do-	Degree in Science with Physics & Maths. 5 Years Exp. in Air Traffic etc. + Navigator's License.
8.	Assistant Director (Air Safety)	-do-	Degree with Phy. or Maths. + 5 Years Exp. in Design, manufacture of aircraft.
9.	Examiner of personnel		First class Navigator's License with 100 hrs. air experience.
10.	Senior Instructor (Navigation)	40 Years	Degree in Engg./Maths/Physics+ Navigator's License.
11.	Senior Gliding Instructor	50 Years	5 Years Exp. as Glider Pilot with 200 hrs instructional flying and 1000 launches of different gliders.
12.	Scientific Officer	35 Years	Degree in Aeronautical/ First class in Physics or Maths. Exp. in aircraft manufacture.
13.	License Engineer	-do-	SSC+Current Aircraft Maintenance Engineer's License.

<i>Sl. No.</i>	<i>Post</i>	<i>Age</i>	<i>Qualifications</i>
14.	Junior Instructor Link Trainer	35 Years	12th + Experience of Instruction on simulated flight.
15.	Asstt. Fire Officer	-do-	SSC+Graduate or Membership of the Institute of Fire Engrs + 3 Years Exp.
16.	Radio Officer	-do-	SSC+Radio Operator's License+First Class Radio Telegraph Operators' Certificate.
17.	Gliding Inspector	-do-	200 hrs. Exp. on glider as Pilot-in-command in dual instructional flying.
18.	Asstt. Aerodrome Officer	30 Years	B.E.
19.	Senior Aircraft Inspector	40 Years	Degree with Physics or Maths or Degree/Diploma in Mech; Elec., Aeronautics + 5 Years Exp.
20.	Aircraft Inspector	35 Years	Degree in Phy. or Maths. + Aircraft Maintenance Engrs License + 3 Years Exp.
21.	Asstt. Aircraft Inspector	21-30 Years	Degree with Maths or Physics + 2 Years Exp.
22.	Technical/Communication Officer	30 Years	Degree/Diploma in Telecommunication.
23.	Asstt. Technical Telecom. Officer	-do-	B.E. (Telecommunication)/Electrical Engg. + Exp. in Radio Communication).
24.	Calibration Pilot	-do-	Airlines Transport License + Flying Exp. of 4500 hrs.
25.	Co-Pilot	-do-	Airlines Transport License + Flying Exp. 2000 hrs.
26.	Meteorologist	35 Years	M.Sc. in related subjects + 2 Years exp.
27.	Professional Assistant	30 Years	Second Class Science Graduate.

28. Asstt. Meteorologist	-do-	M.Sc. Second Class in Phy., Meteorology, Stats/Maths. etc.
29. Scientific Asstt.	-do-	Second Class Science Graduate.
30. Senior Observer	-do-	B.Sc.
31. Observer	-do-	SSC in Science subjects.
32. Inspector of Observatories	-do-	2nd Class Science Graduate.
33. Senior Aircraft Mechanic	-do-	SSC+5 Years Exp. of working on aircraft.
34. Supervisor (Sheet Metal Worker)	25-35 Years	Middle School+ITI Fitter Certificate+12 Years Exp.
35. Jr. Technical Assistant (Testing)	18-25 Years	DME/DEE or Diploma in Aeronautical Engg.
36. Fibre Glass Mechanic Gr-I	-do-	Middle School+Certificate in Fibre Glass+10 Years Experience.
37. Fibre Glass Mechanic Gr-II	21-30 Years	Middle School +Certificate in Fibre Glass+8 Years Exp.

Details of Various Training Courses

<i>Sl. No.</i>	<i>Institute</i>	<i>Course</i>	<i>Entrance Qualifications</i>	<i>Duration</i>
1.	Civil Aviation Training Centre, Allahabad	Air Traffic Controller Officers, Asstt. Aerodrome Officers	B.E.; Degree in Phy. or Maths. Must possess commercial Pilot's/Flight Navigator's License	8 Months
2.	-do-	As Above (Refresher Course)	Should have completed Air Traffic Control Course+ Sufficient practical Experience.	14 Weeks
3.	-do-	Airways Controller Training Course	It is for qualified controllers with experience in Air Traffic Control/ Airways Control	6 Weeks
4.	-do-	Aerodrome Operators' Course	Intermediate with Science	16 Weeks
5.	-do-	As Above (Refresher Course)	Should have completed Aerodrome Operators' Course+ Experience in Air Traffic Service	8 Weeks
6.	-do-	Radio Technicians Basic Entrance Course	SSC+Diploma in Radio Engineering	26 Weeks
7.	-do-	As Above (Refresher Course)	SSC+Diploma in Engg.+ 3 Years Exp. as Radio Technician	10 Weeks
8.	-do-	Radio Technician (VHF/IF and VOR) (Specialist Course)	-do-	10 Weeks
9.	-do-	Radio Technician ILS and Radar (Specialist Course)	SSC+Diploma in Radio Engg.+ 3 Years Exp. as Radio Technician	16 Weeks
10.	-do-	Radio Technician/Radio Teletypewriter (Specialist Course)	-do-	8 Weeks

11.	-do-	Radio Operators' Basic Entrance Course	SSC+Certificate in Radio Operation/Competency in Morse Operation	12 Weeks
12.	-do-	En-route IPIRTF Operations	As above+5 Years Experience as Radio Operator	12 Weeks
13.	-do-	Supervisory Staff in Telecommunication Service (Refresher Course)	As above+Communication Assistant	12 Weeks
14.	Civil Aviation Fire Service Training Centre, Calcutta	Fire Operators' Basic Course	SSC	3 Months
15.	-do-	Fire Operators' (Refresher Course)	Should have completed Fire Operators' Course+Sufficient Experience	8 Weeks
16.	- -	Fire Foreman Senior	As above	10 Weeks
17.	At all Flying Clubs in India	Private Pilot License Course	12th in Science, Holder of Student Pilot License, Physical Fitness as per standards	6-8 Months
18.	Central Flying Training School, Hyderabad, All Flying Clubs	Commercial Pilot's License Course	As above	2-3 Years
19.	Govt. Gliding Centre, Pune, CATC, Allahabad	Glider Pilot's (Instructor's Course)	12th in Science+Glider Pilot's License	12 Months
20.	Air India, Bombay	Training Assistant Flight Purser/Air Hostess Apprenticeship Scheme (only for SC/ST)	SSC + Physical fitness	3 Months

Sl.No.	Institute	Course	Entrance Qualifications	Duration
21.	Air India, Santa Cruz, Bombay	Trainee Technician	SSC+DME/DEE; or 12th with Diploma in Electronics/Radio Engg; NCVT Certification in Fitter/Miller/Turner+3 Years Experience	2 Years
22.	-do-	Graduate Engg. Trainee	B.E. (First Class in Aeronautical/Mechanical/Electrical/Electronics)	2 Years
23.	-do-	Apprentices as per Apprenticeship Act, 1961	As per Apprenticeship Act, 1961	1 to 2 Years
24.	Indian Air Lines	Technical Officer (Age 25 Years)	Degree in Aeronautical/Mechanical/Electrical/Electronics/Telecommunication (First Class)	From amongst Graduate Engg. Trainees
25.	Indian Air Lines	Pilot (Age 30 Years)	12th with PCM+Commercial Pilot's License+FRTO License+Passed Morse test+15 years flying Experience, 50 cross country flying Exp.	Initial trg. for some-time
26.	-do-	Navigation Instructor (Age 25-35 Years)	12th+Navigator's License (first class) or CPL Holder or Ex-Air Force Navigator, 5 Years instructional Experience	on Probation for one Year
27.	-do-	Technician (Age 25 Years)	12th in PCM+3 Years Diploma in Aircraft Maintenance or B.E. in Aeronautical/Elec/Mech/Telecommunication or B.Sc. with 50%)	2 Years

28	-do-	Traffic Assistant (Age 18-25 Years)	SSC (60%), 12th (50%), Graduate/Post Graduate (5%) one year exp. in passenger handling, Typing Speed 30 w p m	Recruited directly through advertisement
29.	-do-	Traffic Officer (Age 28 Years)	Post-Graduate in Marketing Management	First as Management Trainee
30.	-do-	Air Hostess (Unmarried girls) (Age 19-25 Years)	SSC + Medical Fitness	Trainee for six months

Posts Filled Through Promotion only

- (1) Director General
- (2) Dy. Director General
- (3) Principal, Civil Aviation Training Centre, Allahabad
- (4) Director (Training and Licensing)
- (5) Director (Air Safety)
- (6) Director (Regulation and Information)
- (7) Director (Research and Development)
- (8) Dy. Director (Equipment)
- (9) Dy. Director (Regulation and Information)
- (10) Assistant Director (Equipment)
- (11) Electrical and Mechanical Officer
- (12) Regional Senior Air Safety Officer
- (13) Fire Officer
- (14) Air Safety Officer
- (15) Technical Officer (Air Safety)
- (16) Senior Instructor (Link Trainee) at CATC, Allahabad
- (17) Director (Air Routes and Aerodromes)
- (18) Director (Air Transport)
- (19) Controller, Aerodromes
- (20) Dy. Director (Air Routes and Aerodromes)
- (21) Dy. Director (Air Transport)
- (22) Dy. Director (Training and Licensing)
- (23) Senior Aerodrome Officer
- (24) Instructor Incharge Air Traffic Services, CATC, Allahabad
- (25) Assistant Director (Air Routes and Aerodrome)
- (26) Assistant Director (Air Transport)
- (27) Assistant Director (Training and Licensing)
- (28) Assistant Director (Information and Regulation)
- (29) Aerodrome Officer
- (30) Instructor, Air Traffic Service, CATC, Allahabad
- (31) Director (Aeronautical Inspection)
- (32) Controller (Aeronautical Inspection)
- (33) Dy. Director (Aeronautical Inspection)
- (34) Dy. Director (Examinations)
- (35) Director (Aeronautical Communication)
- (36) Controller (Communication)
- (37) Controller (Radio Stores Depot)

- (38) Controller (Radio Communication and Development)
- (39) Dy. Director (Communication)
- (40) Assistant Director (Communication)
- (41) Dy. Controller (Radio Construction and Development Units)
- (42) Senior Technical Officer
- (43) Senior Communication Officer
- (44) Director General of Observatories
- (45) Dy. Director General of Observatories
- (46) Director of Observatories
- (47) Meteorologist
- (48) Air-Craft Maintenance Engineer (Metal Trade)
- (49) Air-Craft Maintenance Engineer (Wood Trade).

Flying clubs have been established at the following places:

Hyderabad Gauhati, Patna, Jamshedpur, New Delhi, Baroda, Hissar, Karnal, Bangalore, Coimbatore, Trivandrum, Bombay, Nagpur, Raipur, Indore, Bhubaneshwar, Amritsar, Jullundar, Patiala, Ludhiana, Banasthali Vidyapith, Jaipur, Madras, Lucknow, Calcutta.

CHAPTER 42

CAREERS IN JOURNALISM

We daily read newspapers, magazines, listen to radio or TV news to know what is happening around us. A piece of information comes to us from a quite distant place in the world, which adds to our knowledge, sets us to prepare to face certain calamities or gives some information of joy, entertainment, laugh, sorrow, emotion. These are all the wonders of modern journalism which believes in quick pace of travel from one place to another. The unbelievable speed, accuracy, truth that is maintained by the profession of journalism is quite astounding. That is why careers in the field of journalism are quite rewarding and challenging, of course, for those who have a natural bent of mind or aptitude for the profession. Journalism is definitely a modern career opportunity at least in India and the field is widening rapidly because of its ever increasing utility and social obligation.

Its utility is felt when we are warned of impending disasters like earthquakes, floods, cyclones, inclement weather, climate much before their occurrence so that we can prepare to escape such calamities and catastrophies. It becomes a social obligation when it feeds people about what is happening in political, economic, cultural and social life of man. The national budget is declared on a certain day at 5 p.m. But immediately it is relayed within an hour or so on a national broadcast or telecast throughout the country and next day newspapers are full of its news. People anxiously wait for its declaration so as to know what is what in the budget. Tax payers want to know what are the concessions being offered to them on taxes, business people want to plan their strategy for the coming year. This is the obligation of journalism to carry news to the people with a tremendous speed and accuracy.

Journalism is not confined to its traditional media of newspapers and magazines only as was the case some forty years before. The concept has undergone a drastic change over these years. As a matter of fact, any piece of information of accurate and precise nature relayed to a large number of people at a given time can be ascribed to journalism. To make it very simple journalism means

communication of information till it does not become stale but is fresh. People involved in journalism—called by a technical name as 'scribes' portray a living picture of events taking place on a day in as much few words as possible but in juicy and piquant manner so that attention of people is immediately caught. Human curiosity is a fluid thing that it has no patience to spare. This curiosity is set at rest by scooping instant information in a lucid and catchy words. That becomes a news.

Novelty is a breath of life and it is not a new find of the modern world. This novelty generates curiosity. Because of the advances in science and technology there is a simultaneous change in the pattern of human communication. The news has become an integral part of our life. In case we do not hear, read, listen or view something out of sorts we feel very uneasy. So the medium to air joys, sorrows and impulses are newspapers, broadcasts, telecasts, which rule the roost. There are 1144 newspapers/periodicals/magazines in the country by 1981 which are carrying news to the people instantly.

Training—Journalist personnel feeds people of all strata of life—intellectuals, technicians, scientists, highly educated, literate or others. Hence, his job to satisfy everybody's need becomes extremely difficult. However, adequate training in the art of disseminating information to all interests of people makes his job easy. After getting Bachelor's degree a person can either acquire in-service training or complete a degree or diploma in Journalism. It requires no emphasis that specialised training is always advantageous for a prospective career. It holds good to careers in Journalism.

There are several universities which have arrangements for imparting training in Journalism. Generally, degree or diploma courses offered by these universities are of the duration of one year. There is a provision in some of the universities to offer Journalism as one of the subjects for graduation which is of three years' duration. Thereafter, there are Master's degree courses in Journalism which are of two years' duration.

The following are some of the important educational institutions providing educational facilities in the field of Journalism in addition to the university courses mentioned above.

<i>Sl. No.</i>	<i>Name of the Institution</i>	<i>Degree/ Diploma</i>	<i>Duration Years</i>
1.	Faculty of Arts, Bhagalpur University, Bhagalpur	B.A.	3
2.	Faculty of Arts, Bihar University, Muzaffarpur	B.A.	3
3.	Faculty of Arts, Calcutta University, Calcutta	B.A. M.A.	3 2
4.	Dept. of Journalism, Gauhati University, Gauhati	Diploma	1
5.	H.K. Arts College, Gujrat University, Ahmedabad	Diploma	1
6.	Dept. of Economics, Madras University, Madras	Diploma	1
7.	Maharaja's College, Mysore University, Mysore	B.A./M.A.	2
8.	Hislop College, Nagpur University, Nagpur	B.J.	1
9.	University College of Arts & Commerce, Osmania University, Hyderabad	B.J.	1
10.	Dept. of Journalism, Poona University, Poona	Diploma	1
11.	Dept. of Journalism, Punjab University, Chandigarh	B.J.	1
12.	Dept. of Journalism, Banaras Hindu University, Varanasi	Diploma	1
13.	K.M. Institution of Hindi & Linguistics, Agra University, Agra	M.A.	2
14.	Bombay College of Journalism, Bombay	Diploma	1
15.	Bharatiya Vidya Bhavan, Madras	Diploma	1
16.	Bharatiya Patrakarita Sansthan, Varanasi	Diploma	1

Apart from the above institutions and universities there are still other institutions which prepare journalist personnel. They are:

(1) *Indian Institute of Mass Communication, New Delhi*—Conducts 8 months' post-graduate diploma course in Journalism.

Graduates with degree/diploma in Journalism with two years experience in the journalist field are eligible.

(2) *Bhawan's College of Mass Education, New Delhi*--Conducts one year post graduate course in Journalism.

(3) *The College of Journalism, Advertising & Printing, Bombay*--It conducts courses as (1) Diploma in Journalism, (2) Diploma in Advanced Journalism, (3) Diploma in Public Relations, (4) Diploma in Information & Field Publicity. Preference is given to graduates.

There are a number of subjects which are taught in the diploma and degree courses in Journalism. Broadly they comprise theoretical and practical training. The main fields of study are:

(1) Reporting and Feature Writing, (2) Introduction to Mass Communication and Radio Journalism, (3) Editorial Writing, (4) History of Journalism, (5) Ethics of Journalism, (6) Graphic Art, Newspaper Design and Make-up, (7) Press Law of India, (8) Advertising, (9) Public Relations, (10) Principles of Journalism, (11) Political, Economic and Scientific Trend, (12) Public Administration, (13) Literature and Art, (14) Current National and International Relations, (15) Press and Production, (16) Sports, (17) Freelance Journalism, (18) Newspaper Management and Law of Press, (19) Constitution of India, (20) Photography.

Very few newspapers like Bennet Coleman Ltd., Times of India, Bombay and Hindustan Times, Delhi offer apprenticeship facilities.

Nature of Work—Journalists perform varied nature of work and their responsibilities vary according to their position and posting. Journalists may be employed as; Editor, Sub-editor, News Editor, Commercial Editor, Sports Editor, Art Editor, Feature Editor, Editorial Writer, Reporter, Cartoonist, etc. When they are employed in editorial capacity, they have to plan layouts of publications and ensure production. They may select news reports and summarise them to fit into space allotted; give proper headlines, arrange report for effective display and correct proofs. They specialise in particular field like foreign news, sports, films, columnists, feature writing etc.

The editorial staff have to work only when they are fed with information. Collection of news is done by Reporters who gather it, write news stories for publication in dailies or weeklies. They interview people of various walks of life, observe events as they take place, undertake research in libraries. As Reporters, they first take brief notes while gathering information and they write reports on them at ease.

Publication of a newspaper is certainly a team work. Reputed news agencies like Reuter, Hindustan Samachar, Press Trust of India collect and transmit information from all parts of the world. A band of sub-editors goes through these materials, checks their authenticity and accuracy from available sources and selects important items for reporting. They edit news and send it to the Chief Editor. The Chief Editor assigns to it a place and manner in which the news is to be printed. Simultaneously, advertising section is engaged in the work of sorting and classifying advertisements and assigning them places in the paper.

Correspondents and Reporters work in very adverse and trying situations like wars, peace, floods, fires, famines, riots etc. which are the news that is to be carried to the people. It is a risky job and there are no fixed hours of duty and no fixed place of work.

Journalists employed in industrial and commercial establishments perform a variety of functions. They look after sales, publicity advertisement public relations, publications department in which they are appointed on posts as Publicity Assistant, Publicity Officer, Publicity Manager, Editor, Sub-Editor, Assistant Editor, Reporter, Assistant Public Relations Officer, Public Relations Officer, Editorial Officer, Journalist, etc. All these people have to look after preparation and organization of exhibitions, production of publicity material in the form of folders, brochures, posters etc., formulation and execution of public relations programmes, writing articles, preparing press releases, maintaining liaison with press, Govt. officials and their organisations. They are to write articles, notes, survey reports, press notes. They should also be capable of preparing design and organise photo-articles, radio talks, film shows, etc.

Personal Qualities Required—These people should have appropriate traits and personality dispositions like sense of news, persistence, initiative, resourcefulness, accurate memory, etc. Along with they must have physical stamina to bear hazardous and busy schedule of work, lively interest in people, things and ideas, love for facts—pleasant or otherwise, concentration, enthusiasm and emotional stability. A sense of justice, fairplay are assets in giving news. Proficiency in a language being reported in, knowledge of typing, shorthand, photography, interview techniques are very important factors in Journalism.

These people have no bar to enter anywhere because of urgency of news that is to be collected and disseminated. The process of gathering information serves them educative. A person in the profession grows in mind and gains a lot of goodwill and contacts. He commands respect of society because he in majority of cases defends it. The field is equally attractive for female candidates too.

Employment Opportunities—Most of the journalist people work for newspapers, magazines, business houses, labour organizations etc. Recruitment is made through newspaper advertisement and placing a demand to the Employment Exchanges. There are ample opportunities for self-employment.

Some of the notable organizations have been mentioned below along with types of journalist they recruit and requirements thereof. This is a very selective list and should not be taken as a complete one. Deserving candidates should look for advertisements or original source for detailed information.

Employing Fields—Journalists are generally employed under Central and State Govts. in various departments as Publications Division, Directorate of Information—Ministry of Information and Broadcasting, Directorate of Advertising and Visual Publicity, Directorate of Field Publicity, Department of Tourism, Parliament, Legislative Assemblies, Press Information Bureau, News Agencies, Publication Houses, All India Radio and TV, Documentation Cent. Advertising Agencies, Air India, Diplomatic Missions, etc. Specific organizations which engage journalists are:

The Indian and Eastern Newspapers Society, New Delhi; Hindustan Insecticides Ltd., New Delhi; Central Warehousing Corporation, New Delhi; Assam Oil Co. Ltd., Dibrugarh; The Times of India, New Delhi; Crompton Greaves Ltd., Bombay; National Building Construction Corporation Ltd., New Delhi; The Tribune, Chandigarh; DCM Co. Ltd., New Delhi; Indian Institute of Mass Communication, New Delhi; NCERT, New Delhi; ITDC, New Delhi; MMTC, New Delhi; Indian Oxygen Ltd., Calcutta; National Book Trust, New Delhi; Services Board, Khadi & Village Industries Commission, Bombay; Canara Bank, Bangalore; Coal Mines Authorities Ltd., Calcutta; Hindustan Steel Works Ltd.; Industrial & Fine Chemicals Industries, Vasant Vihar, New Delhi; Bank of Baroda, Central Office, Bombay; ICI (India) Ltd., New Delhi; Haldia Refinery Project, Indian Oil Corporation Ltd., Midnapur; Handicrafts & Handlooms Export Corporation of India Ltd., Bombay; Indian Freedom From Hunger Campaign Society, New Delhi; Escorts (India) Ltd., Faridabad, Haryana; Indian Explosives Ltd., Kanpur; Madras Fertilizers Ltd., Madras; Punjab National Bank, New Delhi; The Atlas Cycle Industries Ltd., Sonapat; National Institute of Sports, Patiala. In addition there are several Public Sector Undertakings which employ these people. A list of them is given in this book. Also there are numerous private sector establishments which employ journalists in their publicity departments.

CHAPTER 43

CAREERS IN LAW

We often hear some statements like, 'Law is blind', 'Nobody is above law', 'Law of the land is supreme', 'We should abide by the law of the land', 'Hundreds of law breakers may be made scotfree but not a single innocent person be punished', and sometimes some people sometimes utter, out of frustration, 'Law is an ass'. All these statements relate to the prevalent laws of the land which have been enacted to give maximum freedom to the citizens of the country. In democratic countries highest priority is given to laws. It does not, however, mean that other Govts. do not care for laws. Not in the least. If we look back through the backdrop of history we come across certain periods during which laws had unchallenged importance. Take, for example, the case of Judicious Jahangir. He hung a bell out of his palace with the intention that those aggrieved could ring it to seek justice. Jahangir went to the extent of offering himself for punishment since his wife had unintentionally killed a washerman to prove that even the emperor was not above law. Hence, law has been treated as the most important thing to give people natural justice.

The laws are enacted by legislators at national level or at state level by people who are elected by people through adult franchise. As you might be aware that there are three important organs of the Govt. for its smooth and orderly functioning. They are called legislature, executive and judiciary. As mentioned earlier, legislators i.e. MLAs or MPs pass laws for convenience of people taking into consideration the overall situation of the land. These laws passed by the legislators are enforced or implemented by the executive. During their implementation some people are caught while reaking laws. They are tried in courts and offences are established. Culprits, then, are awarded punishment by trial courts in accordance with gravity of a crime. Two sides are heard by a trial court. One the offender and the other aggrieved or affected. At both the places each party defends its case through pleaders and ultimately a case is settled in absolving the offender in case the crime has not been established or awarded punishment if it has been established.

Crimes are not of uniform nature. There are varieties of crimes like arson, loot, cheating, forgery, trespassing, murder, treason, theft, rioting, clashes and many others which even singularly is enough to disturb peace of the entire society. In spite of the fact that there is full machinery to keep a watch on law and order situation, in the form of police still crimes take place. Such crimes are detected either by police or citizens give information to police which ultimately ends into arrests of law breakers and consequently into their trials.

Cases are tried in a court of law where a person who hears points of arguments of defending party or prosecution party. The defending party is one which has been accused of committing a certain crime and the prosecuting side is one which accused the other party. Arguments are advanced by defence lawyer and prosecution lawyer. These arguments are heard by a third independent party which is called judiciary and a person who hears is a judge. Hence, there is a triangle of a case involving three parties. They are defence counsel, prosecution counsel and judge. The judge is a person who is independent and cannot be influenced by impassioned pleas of defence lawyer or forceful pleas of prosecution lawyer. He has to take into account circumstantial evidence and logic of arguments and form his own opinion about commitment of a crime, fix responsibility and then award punishment. He has to be very circumspect and discreet in hearing and giving a verdict of a case.

There are two types of cases or suits. One is called civil suit and other criminal. Civil suits include cases of land, house, property disputes. Here Govt. machinery of police is hardly concerned. But where cases of the nature mentioned earlier take place, police have to intervene because of the nature of crime which is violative of constitutional safeguards provided to citizens. However, we need not go in such details because that is not our aim. Our aim is to look for occupations or careers in law. So far we have come across words like judges and pleaders—which are the two main career opportunities in the law field.

Training—There are a number of universities, constituent and affiliated colleges in the country which have elaborate arrangements for imparting instructions in law leading to degrees like LLB (Bachelor of Law); LLM (Master of Law); LLD (Doctor of Law); Ph. D (Doctor of Law); BL (Bachelor of Law); ML (Master of Law); DL (Doctor of Law). In addition to these universities, there are some institutions which organise some courses in Law. These institutions are:

- (1) Faculty of Law, Baroda University, Baroda.
- (2) Dharmendersinghji College and A.M. Parekh Law College, Rajkot.
- (3) New Law College, Lal Darwaja, Ahmedabad.

- (4) V.T. Cheksi Sarvajanik Law College, Surat.
- (5) Kerala College, Trivandrum.
- (6) Department of Law, Lucknow University, Lucknow.

which organise post-graduate diploma courses in Law, Taxation Law and Practice, Labour Laws and Practice, M.L. Degree in Constitutional and International Laws and Criminology.

There are some universities which allow private candidates to appear externally for their examinations in Law.

Before law graduates start their legal practice they have to register with the Bar Council of India.

Law graduates can also prepare for other fields like Business Management/Administration, Company Secretaryship, Chartered Accountancy, International Relationship, Labour Laws and Practices, Taxation Laws and Practices etc.

Employment--For Law Graduates there is very little scope in wage-paid employment as will be noticed from the following. All the institutions together turned out 38536 Law Graduates during the year of 1982 but paid employment opportunities for them during the year of 1983 were just 585 which is a little over 1.5% to the total turnout. However, most of the candidates in law look for self-employment as a pleader at various courts in the country. Many of the candidates obtain law degrees as a matter of fact amongst whom employed persons in other fields constitute many. Notwithstanding this, there is little scope for these graduates in paid employment. The figures quoted in this paragraph relate to all sectors *i.e.*, private and public sectors and for experienced as well as fresh Law Graduate.

Entry into paid employment under the Govt. sector is governed by two methods. One is through a competitive examination like IAS Examination for Central Services, State/UT Administrative Services and second is by selection. At State level there are special competitive examinations for entry into legal profession like Judicial Officers Service; Subordinate Service of Sub-Registrars etc. Persons entering into legal service of the Govt. are not allowed to practice law as this will intervene in the Govt. business that has been assigned to an employee. Law Graduate can also compete for posts in banks and other organizations where a simple degree is a prescribed qualification.

There are two types of posts under the Govt. They are executive or technical and judicial. Under the executive head occupational opportunities for law graduates can be : Apprentice, Commercial Law Officer Trainee, Management Trainee, Senior Management Trainee, Legal Assistant, Inspector, Translator, Senior

Scientific Assistant, Law Assistant, Assistant Law Officer, Assistant Township Officer, Pilot Officer, Law and State Officer, Assistant Manager (Law), Development Officer, Labour Officer, Security Officer, Industrial Finance Officer (Legal), Secretary, Industrial Relations Officer, Personnel and Law Officer, Chartered Accountant and Secretary, Assistant Company Secretary, Deputy Manager (Legal), Deputy Legal Adviser, Administrative Officer, Solicitor; Law and Contact Officer, Legal Adviser. In private sector also these people are appointed on posts and designations comparable to public sector ones.

Persons having a law degree are given preference over others in employment of Labour Officer, Assistant Sales Officer, Assistant Loan Officer, Deputy Secretary, Assistant Divisional Manager, Chief Personnel Manager, Personnel Assistant, Labour Personnel, Administrative Officer, Secretarial Assistant, etc.

The employing establishments are Life Insurance Corporation of India, Shri Ram Associations, Sarabhai Groups, Cooperative Central Finance Agency, DCM, Nizam Sugar Factory, Bajaj Electricals, Ciba of India, The Joy Engineering Works, Hindustan Sugar Mills, The Atlas Cycle Industries, Kamani Engineering Corporation, Hindustan Lever Co. etc. Several other big industries/concerns/firms have occupational opportunities for law graduates. Almost all the public sector undertakings have positions for law graduates. All such posts are filled through advertisements or through Professional and Executive officers functioning under the respective State Directorates of Employment. Universities have many good opportunities for highly qualified law graduates to teach law. They are appointed on posts of Principals, Professors, Readers and Lecturers. However, many law graduates do not feel at ease in such paid employment.

Many candidates fondle a hidden wish that they would practice law in courts. They enter the portals of courts but immediately come to know a formidable challenge of competition with those doyens of legal practice who have created such an impact or atmosphere in the profession that clients queue before them only neglecting new comers in the profession. Under the circumstances, new comers get disappointed for not having clients and leave practice out of frustration to take up paid employment. It is indeed necessary to know that after acquiring law qualifications and desirous of starting legal practice that such people have to pass through a period of uncertainty and trauma because of clients' reluctance approach new practitioners. Such a period might extend to 2/3 years or even more.

To avoid such a trying situation some law graduates accept apprenticeship of leading lawyers to know tricks of the trade, however more to canvassing for themselves and spread their net of contacts so as to establish themselves into profession through the name of their masters.

Many law graduates have technical knowledge and profound depth of law but cannot marshal their way in arguing a case coherently in a court of law. Such lawyers turn to other careers such as establishing a consultancy agency or sometimes some of them come together and form a solicitor firm.

As practitioners of law some lawyers specialize themselves in a specific field. They are designated after that field like Constitutional Lawyer, Criminal Lawyer, Labour Law Lawyer etc. In case any lawyer establishes himself firmly in this profession then there is no dearth of his earning, reputation and status. But in such a case this lawyer has to forgo his comforts of life, entertainment, family life because of professional urgency comes in his way. However, the job satisfaction that he earns is beyond all these flimsy things for him. Professionals of law as others need not bother about these things in the interest of the profession and personal satisfaction.

There are other types of opportunities in the profession in the form of judges, magistrates, justices etc. These belong to judicial side of law. These people sit on the seat of judgment. Their aim is to offer natural justice to people. There are different types of judges depending upon the nature of the court. There may be labour courts, tribunals, railway courts, juvenile courts, mobile courts, sessions courts, district courts, high courts and lastly supreme court.

Civil courts are meant for cases involving land, property, heirship or ownership rights etc. Criminal courts are engaged in cases of riots, troubles, fights, murders, cheating, forgery, theft etc. These two types of courts have distinct jurisdiction. In these courts lawyers take up cases and try to prove that their clients are right and put such evidence as it would convince the sitting judges of the clients' innocence. But lawyers of other parties too acts in a similar way or fashion, try to refute evidence or prove it to be a calculated design or fabrication of other lawyers just to implicate their clients. From out of the mass of evidence produced by both the lawyers, arguments advanced by them, it remains with presiding judges to sort and sift out the truth and then give their verdict in favour or against clients. Because of arguments, counter arguments and other matters relating to examining witnesses etc, the cases continue years together in a bid to have scales of justice not to have tilted on one side only. There lies justice.

Various positions in different courts of law can be stated as Chief Justice of Supreme Court and High Court, Judges of both these courts, Puisne Judge, District and Sessions Judge, Munsif-President of Industrial Tribunal, Judges of Subordinate Courts, Magistrate, Magistrate of Juvenile Court, Magistrate of Labour Court, Coroner, Adjudicator, Shirastedar, Judicial Member of Income Tax Tribunal, Railway Court Magistrate, Civil Judge, etc. Other positions in courts are Prothonotary, Registrar, Court Receiver

Insolvency Registrar, Court Clerk. Sometimes special judges are appointed on commission on enquiries. Other positions in the field of law are Reader, Peshkar, Bench Clerk, Petition Writer, Liquidator, Sheriff, Official Assignee, Interpreter, Probation Officer, Translator, etc. At the Govt. level the highest authorities are Attorney General, Solicitor General, Advocate General, Legal Remembrancer, Govt Advocate, Public Prosecutor, Police Prosecutor, Attorney, Pleader, Legal Adviser, etc

The terms of appointment of judges are remarkably different than that of the other civil employees of the Govt. The judges continue to serve upto, in some cases, 65 years of their age, are paid high salaries, Govt. residential accomodation is provided and there is no interference in their work. Pleaders, Advocates, Lawyer have no age bar for practising their profession and enjoy freedom of activity. Judiciary is quite independent of Legislature and Executive organs of the Govt. The atmosphere in the court is sober, calm and quiet but sometimes there are bursts of laughter based on circumstantial inaccuracies or occasional mix-up of things.

CHAPTER 44

CAREERS IN MARINE TRANSPORT

Shipping transport in India in good old days was not popular among people. However, situations have changed now and it has now been the main vehicle of communication and commerce. Three-fourth of the international trade is carried by ships. The speciality of shipping transport is that it provides movement of passenger and goods clearance at comparatively less cost and at lesser investment because waterways are the free gift of the nature unlike road or rail for which special roads are to be prepared. This Shipping Transport or Marine Transport provides challenging jobs to the adventurous youth having varied qualifications and liking for life of tremendous thrill particularly for those who get a chance to serve on the foreign-going vessels.

India has a coastline of 5700 kms on which lie a good number of sea ports. With an increased growth in commercial and industrial activities our ports have become an unavoidable link for the progress of our economy. Compared to the situation of 1947, the year in which we achieved our independence, at which there were just 59 vessels but by October 1978 this number reached 385 of diverse type providing increased opportunities and challenging careers to our adventurous young people. In keeping with the tempo of scientific and technological advancements in the overall economy of the nation, Marine Transport has assumed a place of significance. This system now comprises sophisticated modern cargo liners (Ships), giant tankers, bulk and combined carriers, passenger, and other types of specialised shipping services. This fleet now operates on the seven seas by both public and private shipping companies.

India is the second largest shipowning country next to Japan in Asia, first among the developing countries of the world. It stands 10th in the world shipping as far as tonnage is concerned. With the increase in shipping activities its infrastructure has also undergone a change. There are now 144 Light Houses compared to 22 of pre-Independence period. Besides Light Houses there are Radio Beacons, Decca Navigator Chain Stations, Fog Signals, Light Vessels, Light Buoys, Light House Tenders, Motor Launches which keep a hawk like vigil at sea.

Shipping Corporation of India established in October 1961, an amalgamation of Eastern Shipping Corporation and Western Shipping Corporation is now fully owned by the Govt. of India. Another major shipping company in India is Mughal Lines whose activities till now were restricted to carry Haj Pilgrims but now it has diversified its business along the coastline for coastal cargo service also. Other shipping companies are :—Konkan Passenger Service, Overseas Tramp Service, India Red-sea Cargo Service, India-West-Asia (Gulf) Cargo Passenger Service, Chaugule Steamship, etc.

There are ample opportunities of training on board the ship for the personnel to enter into different trades in Merchant Navy departments like Deck Department, Engine Room, Saloon and Catering, Navigation and Engineering. Merchant Navy provides careers for young men with different educational and social background, of different interests and ambitions. The careers in Merchant Navy may appear to be glamorous and attractive, however, in actual practice it is a lonely life at sea, hard and monotonous one, away from the family and without social life.

Organs of Marine Transport—To promote Indian maritime activities in a systematic and methodical way Directorate General of Shipping was established. Shipping companies in India have to obtain permission of the Linear Shipping Conference which governs important trade routes. There are also bilateral agreements signed with other countries. The Shipping industry falls under the Ministry of Shipping and Transport under the above Directorate General which looks after matters concerning shipping and navigation safety of life and ship at sea, development, training of personnel, international maritime conventions and the life etc. through its different organs like:

(1) *Mercantile Marine Department*—It is responsible for registration, tonnage measurement and crew accommodation of ships, survey of loadline and safety of ships, training of seamen and officers, holding of examinations or certificates of competency for the Merchant Navy Officers, inspection and approval of statutory equipment. There are three Distinct Mercantile Marine Departments located at Bombay, Calcutta and Madras.

(2) *J. S. Rajendra*—It provides pre-ship training to navigating officers responsible for safe navigation, loading and discharging of cargo, maintenance of ships and safety of passengers and crew.

(3) *Directorate of Marine Engineering Training*—It is located at Calcutta with a branch at Bombay. Its main responsibility is to train sea Engineering Officers in the Marine Engineering College, Calcutta. The course is of 4 years duration. Candidates having passed 10+2 with Physics, Chemistry and Maths are eligible for training. It also trains graduate engineers in Mechanical and Electrical Engineering for one year.

(4) *The Lal Bahadur Shastri Nautical and Engineering College, Bombay*—It offers pre-sea instructions in navigation and engineering to candidates preparing for various grades of professional examinations conducted by the Ministry.

(5) *Seamen's Welfare Offices*—These offices are functioning at Bombay, Calcutta and Madras to look after welfare and possible amenities that could be extended to seamen like social security, hostel-cum-club and medical facilities.

Apart from the above organizations there are other establishments which assist Marine Industry to function smoothly. They are ship building and ship repairing establishments.

Hindustan Shipyard Ltd. Vishakhapatnam and Cochin Shipyard Ltd. at Cochin are the ship building establishments. Mazgaon Docks, Bombay, Garden Reach Engineering and Ship Builders Ltd. Calcutta, Goa Shipyard at Vasco-da-Gama build naval ships as also use their spare capability to build merchant navy ships.

Marine Transport also includes sailing vessels. A sizable maritime manpower is employed in this section of the industry.

Besides the above organizations, there are other departments which play an important role in operating ships. They are:

(1) *Department of Light Houses and Light Ships, New Delhi*—It is headed by Director General having Headquarters at New Delhi. He administers the coast line dividing it into six light house districts, each under a Director. This Director is responsible for establishment and efficient maintenance of light houses and other navigational aids. The Department controls all the Light Houses, Radio Beacons, Decca Navigation Chain Stations, Fog Signals, Light Vessel and Lightbuoys. The training centre at Calcutta imparts training to light house keepers and technicians, including refresher courses. The Department also conducts research relating to various problems connected with Light House Engineering.

(2) *The Naval Hydrographic Department, Dehradun*—It is responsible for production of navigational charts and other publication. It surveys the Indian coastline and adjacent waters. The Hydrographic School is located at Cochin and meets all the training requirements of surveying officers, sailors, etc.

(3) *Central Marine Design Centre & Research Organization, Bombay*—Carries research relating to economic liability, standardization, market research and techniques of ship operation.

(4) *Narottam Morarjee Institute of Shipping, Bombay*—It trains personnel in commercial shipping and conducts professional exami-

nations. Also provides research facilities in various commercial aspects of the industry.

(5) *Port Health Organization, Calcutta*—It has its branches at Bombay, Cochin, Kandla, Madras, Goa, Vishakhapatnam and Ramnad. It is responsible for quarantine, immunization, medical facilities for seamen, inspection of imported foodstuffs.

(6) *Air Sea Search and Rescue Organization, Bombay, Calcutta, Cochin, Madras*—When a ship is in distress it sends message accordingly. Rescue duties are carried out by Coastal Radio Stations, Mercantile Marine Department, Indian Navy & Indian Air Force.

(7) *Indian Coast Guard Service*—It is a paramilitary organization, headed by Director. Its duty is to protect unlimited and unexpected sea mineral wealth from poachers and intruders.

(8) *Dredging Corporation of India*—It has got 7 dredgers, four tugs, one survey launch, 3 non-self propelled hopper barges and two sets of floating and shore discharge pipe lines and necessities.

Other organizations in the Marine Transport are Directorate of Inland Water Transport of national level and Inland Water Transport Corporation at state level. They employ Marine Engineers, Assistant Marine Engineers, River Surveyors, Pilot Inspectors, Head Pilots, Pilots, Marking Manjhis, Marking Dandya, Dredging Masters, Inland Master Drivers, Seacunny, Lascars & Greasers.

(9) *Inland Water Transport Corporation*—Its main duty is to encourage river navigation and find out new navigable channels and to guide states in carrying out their plan. It functions through a number of units such as - Rajbagan Dockyard, Commercial Department, Marine Department, Shipping and Development Department, Deep Sea Ship Repair Department, Salvaging Department, Administrative Department. It is headed by Chairman-cum-Managing Director and is assisted by Principal Adviser, Project Manager and several other senior and junior technical hands. Some states have also their own corporations.

Jobs in Marine Transport

1. **Captain**—Also called the Ship Master is the head of the ship and ensures navigation, exercises complete control over officers and crew on board and carries on ships business at ports at call. He directs navigation of vessels assisted by other officers. He lays course or voyage for officers on watch to follow. He maintains day-to-day log of events during voyage. He is responsible for discipline on vessel. He sends periodical reports to the owner of the ship for increasing efficiency of the ship.

2. Chief Officer—He is next to Captain. He may be called **First Man** of the ship. He supervises activities of deckworkers and loading, storage, and discharge of cargo. He exercises control over deck crew, assigns duties and maintains discipline. The second and third officer assist him. He passes orders of captain to engine room and relays messages and ensures orders are carried out.

3. Harbour Master—He exercises control on administration on docks and wharves and controls the movement of vessels in and out of port.

4. Ship Engineer—He plans and supervises engineering activities of engineers and technicians aboard ship; operates, maintains and repairs engines, motors, pumps, condensers and other equipment.

Other jobs in the Marine Transport are categorywise.

- (i) *Navigational Officers*—Master, Chief Officer, 2nd Officer, 3rd Officer, Radio Officer, Purser, Deck cadet.
- (ii) *Engineering Officers*—Chief Engineer Officer, 2nd Engineer Officer, 3rd Engineer Officer, 4th Engineer Officer, 5th Engineer Officer, Electrical Officer.
- (iii) *Petty Officers*—Chief Steward, Fitter, Assistant Fitter, Wireman.

Ratings

- (i) *Deck Department*—Serang, Tindal, Cassab, Seaman/Helmsman, Seaman-I, II, III, Bhandary, Utility Hand, Carpenter.
- (ii) *Engine Department*—Serang, E R. Rating-I & II, Bhandary.
- (iii) *Catering Department*—Chief Cook and Baker, 2nd Cook, 3rd Cook, Pentryman, Gerald Steward, Junior Utility, Utility Hand, Laundryman.

Under Directorate General of Shipping there are a number of Technical Officers working under Nautical Adviser and Chief Surveyor such as: Principal Officer, Captain, Superintendent/Deputy Nautical Adviser, Nautical Surveyor, Ship Surveyor, Engineer Officer, Junior Naval Architect, Radio Inspector, Senior Lecturer.

Under Harbor Projects there are Chief Engineer-cum-Administrator, Principal Engineer, Deputy Chief Engineer, Shipping Master, Director, Seamen's Welfare Officer, Executive Officer, Assistant Shipping Master, Assistant Director, Seamen's Employment Officer, Regional Officer.

Recruitment

Seamen's Employment Offices are functioning at Calcutta and Bombay. They register and supply seamen. No Indian ship or foreign ship can employ Indian as a seaman unless he is registered with Seamen's Employment Offices. All particulars of seamen are recorded at this office. All other events regarding engagement, discharge, promotion, change of roster and other service matters serve as a permanent document. These are maintained. There are ample promotional avenues for sea personnel.

Training

As shipping is an international industry, Indian shipping has to keep pace with technological development for which purpose it needs intensively trained personnel to design, construct, operate, maintain and repair ships. Such training facilities are provided by various training organizations. All the personnel have to obtain competency certificate.

(1) *Trainingship Rajendra, Bombay*—On successful completion of training cadets are placed on board the merchant ships as deck apprentices for a period of 2 years. After apprenticeship navigating cadets are eligible to appear for certificate of competency examination as second Mate. On obtaining certificate of competency he is appointed as 3rd officer, 2nd officer.

A combined written competitive examination is held in English, Physics, Chemistry, Maths and General Knowledge for selecting Navigating and Marine Engineers. Candidates should have passed 10+2, minimum age is 20 years and should be unmarried Indian citizen. Duration is of 11 months. Scholarships are awarded to deserving candidates.

(2) *Directorate of Marine Engineering Training, Calcutta, Bombay*—The Course is of 4 years duration. All other requirements are as for T.S. Rajendra. These cadets get passing out certificate and are eligible to be appointed as 5th Engineer.

To meet emergency situation direct entry is given to graduates in Mechanical/Electrical Engineering. Age limit is 21 to 24 years. The duration of the course is one year. The selection is based on number of marks in the B.E. Examination.

(3) *Post Sea Training for Floating Officer Personnel*—Lal Bahadur Shastri Nautical Engineering College, Bombay. It offers training in navigation and engineering to candidates for professional examination conducted by the Ministry of Shipping and Transport. There is also a Life Boat Training School under the college which awards certificate of Proficiency to Seaman to become Life Boatman. Admission is open throughout the year for all courses and candidates may enroll for any of the courses on any working day except Radar Observer's Course which commences in the

middle of every month. Duration of the course is three months except Inland Water Transport Certificate I and II and Radio Observer course both of which are of two weeks only.

(4) *Purser Radio Officer*—These are recruited directly by Shipping Companies. No systematic facilities for Radio Officers are provided. Candidates have to study of their own in schools and colleges teaching wireless telegraphy and telecommunication but before being eligible to appear for certificate of competency examination.

(5) *Pre-Sea Training Facilities for Direct Entry Cadets*—Two shipping companies have organized interim short period pre-sea training facilities for direct entry navigating cadets.

(6) *Great Eastern Shipping Company*—It provides 3½ months intensive pre-sea training to direct entry cadets selected for apprenticeship training as floating officers. The Academy is on T. S. Jawahar, Bombay. Training covers Navigation Meteorology, Life Saving at sea, chart work, ship stability & First Aid.

Life at sea is adventurous and it can satisfy those people who have initiative, drive and novelty of life.

CHAPTER 45

CAREERS FOR SSC PASSED CANDIDATES

Success in the 10th class examination brings personal satisfaction for having crossed one important landmark in life which opens up a vast number of educational, training opportunities thereby equipping young people to build up a prospective occupational career. However, such a success brings to a majority of them its anxieties and problems in relation to a choice of study or rather a course of action that one wants to select. The age at which this success is achieved cannot make them competent enough to select a suitable course of action because of their immaturity and lack of knowledge of educational/professional/technical/occupational opportunities that lie before them. Added to these problems are other peculiar problems of availability of resources and possession of requirements of varied nature of demands in respect of them. When candidates face these trying problems and know the yawning gap between their own knowledge and the knowledge of the world of work they are perplexed in what way to go and inundate into cold water.

It is not only the shortage of financial backing better expressed in poverty that prohibits candidates to go for higher education or professional training but there are equally other situations which do not permit them the action they would like to follow—securing low percentage of marks in the SSC examination does not qualify them entry into professional or even educational institutions because of the trend to restrict admission to those who secure higher number of marks; non-availability of educational or professional courses in the vicinity, a pressing need to secure a job as early as possible; and one does not want to prosecute further studies for one reason or the other are some of the other reasons to discontinue studies. That is why a majority of school leavers looks for paid employment.

Principally, there are two ways that are available for candidates to ponder over. One of them is to seek employment immediately after passing the examination. Second is to continue their further studies. In either way they want to go, it is not roses, roses all the way. For higher studies they have to pass another important milestone i.e. 12th class examination after which they can go for training suitable for them. This book gives information on

various courses—university and non-university leading to professional qualifications and entry into the concerned profession. The nagging problem is of those who cannot prefer this line of action. What can they look for? We have already considered the avenues that are open to non-SSCs. The bulk of candidates who remained untouched for the purpose is that of those who have passed the SSC examination and cannot go for any higher studies. An attempt has been made to give information on career opportunities or employment opportunities for such candidates although much of such information has appeared in respective career fields described elsewhere in this book. An effort has been made to skip that information, however, to give consolidated information at one point repetition could not be avoided.

It has been estimated in the 7th Five Year Plan Document that some 382 lakh (actual 38226.4 thousand) were SSC/HSC out of which 233 lakh (actual 233181.1 thousand) were economically active. The term economically active means available for any kind of activity or in simple words employment, at the beginning of 1985. This would rise to 524 lakh and 319 lakh respectively during the 7th Plan period. This indicates that job opportunities for more than 86 lakh people will have to be found out during these 5 years which seems hardly possible looking to the meagre occupational opportunities available for these candidates which is just a trickle. If we add figure of candidates who have received general education upto the level of a university degree *i.e.* B.A./B. Sc./B. Com or even post-graduates in this because by virtue of such higher education, still they are not held eligible for any professional or technical jobs/training and hence they have an eye on the job opportunities that are available for simple SSCs and employers also give preference to them. In nutshell it means that occupational opportunities get shrunked for SSCs. That itself is a serious matter.

In such a vexing situation such candidates pass sleepless nights to arrive at an agreeable conclusion. To make their work lighter an attempt has been made to state here as to what are the job opportunities open to them to enter in them directly or what short courses are available to them pursuant to which they can enter occupations and start earning.

After passing 10th class following university courses are open to candidates provided other things allow them to do so and the will of the candidates that prompts them to pursue such courses by means of other aids.

They can pursue academic education leading to jobs of Teacher, Professor, Social worker, P. T. Instructor, Librarian, Pleader, Journalist, Psychologist, Economist, Linguist, Historian and so many others.

By opting Science (Maths group) subjects they can further prepare for technical professions like engineers in Civil, Electrical,

Mechanical, Aeronautical, Naval, Metallurgical, Chemical, Instrumentation, Electronics, Telecommunication, Automobile, Textile, Marine Engineering, etc. Those opt for Science (Biology group) subjects can prepare for professions for Doctor, Surgeon, Dentist, Veterinary Doctor and others.

Those who opt for Commerce subjects have openings like Cost Accountant, Works and Cost Accountant, Auditor, Accounts Officer and such other occupations.

All these occupational opportunities may appear all that glitters is not good to many candidates because of their pitiable situations and hence wish for jobs that may be available instantly or require short preparation, no matter these would be at the lower rung of the ladder. The only thing is that such employment should bring solace to them and achieve equanimity of life. Such openings have been described below.

Direct employment opportunities that are available to SSC passed candidates are that of entry occupations. Entry occupations are those for which no previous training or special preparation is stressed. Most of these occupations are learnt by either experience or through in-service training. Clerical work, sales work, banking and insurance jobs, transport and communication jobs, public health services, catering and entertainment work, defence services, police, fire fighting and protective service are some of the occupations and occupational fields the SSC passed candidates would look for employment. They are described below:

(1) Clerical Occupations—Clerks perform duties like despatch of letters, deal with routine correspondence, link and file papers, maintain records, paper and issue bills, pay and collect bills, post entries in records, book orders, account money, answer telephone calls and render various services to the public, customers or clients. Typing, compiling, keeping stores, tabulating statistical data, attending enquiries of public are also their duties. Other occupations in the line are known as Record Clerk, Correspondence Clerk, Personnel Clerk, Production Clerk, Wage Clerk, Insurance Clerk, Bill Clerk, Telegraph Clerk, Booking Clerk, Octroi Clerk, Cashier, Audit Clerk, Cost and Works Clerk. Computing Clerk or Statistical Clerk, Office Machine Operators, Key Punch Operator. All these occupations are termed as white-collar jobs. This field is much overcrowded but since clerks are required everywhere this occupation affords employment for all levels of ability.

Under the Central Government the entry is through Staff Selection Commission for which age limit is 18-21 and under the State Government it is through respective State Public Service Commissions for which age limit varies but is generally 18 to 25 years. Banks and Railways, P & T Department have their own arrangements to select clerks. Other Departments select clerical staff through sponsors of Employment Exchanges. All such posts

require knowledge of typing. These are open to both male and female candidates.

(2) **Sales Occupations**—These occupations have amply been discussed under a separate chapter 'Careers in Selling' which may be consulted.

(3) **Insurance Workers**—Insurance field, both life and general offers good occupational opportunities, to Insurance Agent, Insurance Field Worker who procure business for the Insurance Companies. While Agent works on commission basis purely from the performance of his work, Field Officer supervises the work of Agents. A good performance of an Agent may attract employment as regularly paid post of Field Officer. Training of Agents is undertaken by the company itself.

(4) **Transport and Communication**

(a) *Post and Telegraph*—This department has the following posts for SSC passed candidates:

Postal Clerk, Sorter, Telephone Operator, Telegraphist, Town Inspector and Wireless Operator. All these posts are filled by inviting applications through advertisement. Selection procedure is quite simple. Candidates are selected on the basis of marks obtained in the 10th class examination adding bonus marks for higher education and sports. There is no interview as a matter of fact. The advertisement is issued twice in a year. Those who had obtained highest number of marks are selected in order of merit.

(b) *Railways*—This has occurred elsewhere in this book

(c) *Road Transport*—Road transport employs Drivers, Conductors, Ticket Checkers. Promotional opportunities are there as Supervisor and Inspector. Conductors should have to possess first aid certificate and conductor's license. Age varies from state to state but generally it is 18-25. Recruitment is made through Employment Exchange. After recruitment they are given on-the-job training.

(d) *Airways*—This has been explained elsewhere in this book.

(5) **Agriculture Forestry, Community Development**

(a) *Forester*—He assists a Forest Ranger in development of forest and exploitation of their produce. Age limit is 18-24. They are selected by Chief Conservator of Forest provided they fulfil physical standards. They are selected through written test and interview. They are trained in the Forest Training School run by the Forest Department for one year at the state expenses. Trainees receive stipend also.

(b) *Bal Sevika and Griha Sevika*—These opportunities are open to female candidates only who look after proper growth and general development of children, well-being of ruined family.

The age limit is 21-35 years. They are trained for one year in a departmental training centre.

(c) *Cooperative Supervisor/Inspector*—He is essentially a field worker. His work covers credit, marketing, framing, processing, housing, transport, cottage industries, etc. Selection and training of these people is done by State Governments in their respective training institutions free of cost. Initially they are appointed as Junior Inspector/Supervisor.

(d) *Panchayat Secretary*—He performs all administrative and developmental duties and supervises employees. They are selected through State Public Service Commission/Deputy Commissioner/Local Self Govt./Panchayat itself as per the state policy. After selection they are trained for 6 months.

6. Careers in Defence Services—This has elaborately been given under the chapter Careers in Defence Forces in this book. Following additional information is given here:

(a) *Artificers in Indian Navy*—These are recruited through a Competitive Examination held twice in a year. Successful candidates are trained for 4 years as Engine Room Artificers, Electrical Artificers, Ordnance Artificers, Shipwright Artificers aboard INS (Indian Navy Ship) Shivaji at Lonawala near Pune. Candidates who have offered science subjects for SSC are required to appear for a test in English, General Knowledge and Mathematics. Age should be 14½ to 17 years. They are paid full salary in addition to free boarding and lodging facilities.

(b) *Dockyard Apprentices*—Dockyard Apprentices School, Bombay, trains apprentices to man technical positions in the dockyards. Boys between 16-19 years of age and having passed 10th class with science subjects are to appear in the competitive examination conducted twice in an year. They are tested in Mathematics, General Science and General Knowledge. Successful candidates are interviewed later and selection made. They are paid stipend during the period of training. Training is imparted in trades like Electrician, Millwright, Maintenance Mechanic, Tool and Die Maker, Instrument Mechanic, Refrigeration and Air Conditioning Mechanic. These apprentices are governed by the Apprentices Act, 1961.

7. Protective Service Occupations—These have also been discussed elsewhere in this book. Additional information is given here.

(a) *Assistant Sub-Inspector of Police*—He maintains law and order in his jurisdiction, investigates crimes, apprehends criminals and arranges night patrol. Special duties like security arrangements, traffic control, intelligence, enforcement and anti-corruption work are often entrusted to him. Posts are available in State Police, Border Security Force, Central Reserve Police, Railway Protection

Force, Central Industrial Security Force, Central Bureau of Investigation, Central and State Excise Departments, State Reserve Police Force, etc. Those passing 10th class with Science subjects get appointment as in wireless wing. Age is 18-25 years with usual physical standards.

(b) *Excise/Customs Sub-Inspector/Examiner/Appraiser*—Excise is a tax on goods at production source. These people have to assess excise duty on goods and prevent unauthorized production, smuggling, sale and use of exciseable commodities. They are assisted by Excise Constables. Qualifications vary from Higher Secondary to Graduation. Some States accept SSCs.

(c) *Customs Searcher*—They are employed for searching baggage of passengers at Airports to detect smuggling of goods. Quite often SSC passed candidates are recruited to these posts.

(d) *Jail Warden*—These are basically for non-SSCs but SSCs are preferred. They have to fulfil all the conditions that are applicable to police constables.

(8) **Service Occupations**—These have been mentioned under a special chapter on 'Careers in Service Occupations'.

(9) **Craft Courses**—These have also been described under the ITI Training and Apprenticeship Training Schemes explained elsewhere in this book.

(10) **Civil Aviation**—Occupations in these fields have been described under the chapter 'Careers in Air Transport' in this book.

(11) **Public Health**—These have also been mentioned under the chapter 'Careers in Paramedical Fields'.

Occupations in banking industry, agricultural fields, teaching, printing industry, need based programmes, self employment have been mentioned at appropriate places in this book. These may be taken into account while trying to locate occupations or training courses thereof meant for 10th class candidates.

CHAPTER 46

CAREERS FOR ARTS, SCIENCE AND COMMERCE GRADUATES

We, The CHANCELLOR, VICE-CHANCELLOR and MEMBERS of the COURT of the UNIVERSITY OF... ..certify.....that the within signed.. .. of.. college having been examined for the degree of..... and adjudged to have passed in the.. class, the degree of.....has been conferred on him at....". These words in a beautiful and artistic print are enough to make the possessor of a degree certificate proud of his success and achievement. And why not? Years of efforts, investment in cash and kind have ultimately been transformed into such great success. The person passes his days immediate to this success in day dreaming of turning his coveted wishes into reality. However, when he faces problems of earning a living on the strength of such a degree in Arts, Science and Commerce, he immediately comes on the earth. All his wishes, thoughts, ambitions and hopes prove as flimsy as soap bubbles, of fleeting nature. The realities of finding a job make him completely nervous and depleted in his enthusiasm. This will be more clear from the following table which is in comparison with graduates in professional and technical fields.

Table indicating sectors of employment, outturn of Graduates/ Post-Graduates and vacancies available for them in Central Government, State Government, Quasi Government, Local Bodies and Private Establishments.

<i>Sl. No</i>	<i>Categories of Educated People (Graduates, Diploma Holders)</i>	<i>Outturn in 1981</i>	<i>Vacancies Available in 1982</i>	<i>Percentage of placement to Outturn</i>
1.	Engineering	56183	37808	67 per cent
2.	Technology	3804	866	22.76 per cent
3.	Agriculture	12505	9776	78.17 per cent
4.	Medical	26192	11854	45.18 per cent
5.	Natural Scientists	16813	8578	51 per cent
6.	Other Graduates & Diploma Holders	21129	8230	38.95 per cent
7.	Social Scientists and Teachers (Post-Graduates)	24,56	33570	13.53 per cent
8.	Arts, Science and Commerce Graduates	602678	40686	6.75 per cent

In the Annual Number of the Bulletin on Job opportunities in India published by the Central Institute for Research and Training in Employment Service, New Delhi, it has shown the outturn of graduates in 1981, vacancies that were available for them the following year in each of the broad sectors of employment. It may be surmised that the placement of all the graduates except in technology, social scientists and arts, science and commerce graduates is a happy phenomenon considering the fact that quite a few of them fly overseas or start their own enterprises relieving the tension of unemployment. The percentages of low placement of technologists may be ascribed to low rates of emoluments offered to them and hence they are available for employment. However, the taxing problem relates to the last two categories i.e., the post-graduates in general disciplines and graduates in the same disciplines who have a reason to feel embarrassed for not getting employment after investing in their education for 5/6 years. That has been shown in the above table. We are not that much concerned with other graduates since we are to stick to the title of the chapter.

Not only that these graduates face the spectre of unemployment but also face underemployment which is the worst form of employment. This has not been seriously thought over by anybody. This has been amply discerned in the fact that in a bid to get employed within available proper employment they fail and turn to such other posts on which they have no claim being highly qualified or say over qualified. They have an eye on posts meant for SSC passed candidates and treacherously they are given preference over the SSC. This affects in two ways.

First, they deprive the rightful claimants of their share of employment and make their range of opportunities shrink. Ultimately these deprived people face unemployment problem at no fault of theirs.

Secondly, they have a genuine remorse that their hard earned knowledge is not being utilized. They do not get the equivalent return of their qualification consequently resulting into loss of devotion to duty and neglect of life. Hence, they drag in their life.

There is a vicious circle. Knowing full well that these graduates are finding difficult to get employment, still we are not putting any bar to turn them out from our universities. Why? It cannot be held that it should be the duty of the Government to give employment to everybody because it had provided educational opportunities to them. It should be borne in mind that Government had a major function to perform. That is to raise the rate of literacy among its citizens. Since creation of other types of professional and technical personnel has to be curbed to the extent they are required as also looking to the limited resources and infrastructure, Government is left with no alternative but to continue creating the types of graduates we are talking of. Every year because

of this these graduates are getting accumulated posing a threat to the planners.

However, Government has come out with solution in diverting these people to self employment alongwith others. In a study undertaken by the office of the Development Commissioner (Small Scale Industries), Ministry of Industry, New Delhi, of the achievements of District Industries Centres to boost self-employment as a measure to tackle the problem of unemployment, it has been shown in its appraisal report for 1983-84 that the District Industries Centres alone were successful in establishing some 349300 small scale units during 1983-84 creating job opportunities for 1115133 during the same year. There are other agencies in addition to District Industries Centres like Nationalized Banks which also extend financial and infrastructural facilities for new entrepreneurs. This definitely has eased the problem of unemployment. The share of graduates of the type we are considering now may be marginal but it is there.

We have given our thought to the overall position of a scene of employment opportunities and related matters in the organized sector only. However, there is a vast field of unorganised sector which absorbs many people in its employment. It will be a matter of serious consideration if we see relative percentages of people who work in these two sectors i.e. Public Sector and Private Sector. Public Sector employment is just twelve percent with a further break-up of 8 percent in the Govt. Sector and 4% in the Private Sector. Remaining 88% work in the unorganised sector. Graduates in Arts, Science and Commerce will have to create their own jobs. It will not be out of place to mention that in the 7th plan, there are larger allocations in the agriculture, transport, education and other sectors which will create self-employment opportunities.

Under the minimum needs programme there are several avenues of self-employment. The target that has been fixed for adult education during the 7th plan period is 100 per cent literacy among the age group of 15-35. During the 6th plan 20 million persons out of 100 million people were covered under the adult education programme through a network of 380 voluntary agencies, 19 universities and 13000 centres of adult education. The remaining 80 million persons are to be covered during the 7th plan period which is 4 times the achievement during 6th plan and the various agencies would be accordingly multiplied by four. These are the clear opportunities for young people especially graduates coming from rural areas. The 7th plan has allotted Rs. 360 crores for this purpose.

Taking all the factors of the nature that we have discussed above we are left with now to strictly see the types of vacancies that are available to these graduates and the fields of employment in which these opportunities lie. We just cannot avoid repetition of the matter of course, in greater details in many fields that we have

discussed in this book where these graduates find employment. Here, a cursory mention is made solely to show occupational opportunities for these graduates. Candidates should have to refer to the relevant chapter for collecting appropriate information.

There are two ways open to graduates to enter into an occupation. They can directly enter it or get prepared and then enter into it. For many of administrative and executive jobs, qualification prescribed is a university degree irrespective whether it is in the Government Sector or Private Sector. However, candidates have to take a competitive examination which is rather a tough going. The recruitment under the Government Sector is made to fill in the posts of top officers, no doubt, initially at junior posts but as they go on accumulating experience and attaining maturity, they hold the key posts on whom Government depends very much in carrying out government business efficiently. These people belong to Indian Administrative Service. Since they are being considered for the country's top positions, naturally candidates of high calibre, integrity, depth of knowledge, sincerity are selected. Of late such candidates are required to take this examination in two parts. Part I is a screening examination in which those who pass only are allowed to take the main examination. After selection they are trained in different areas of state administration and then put at appropriate posts in appropriate grades. The commonly known occupations these people hold are Assistant Collector, Deputy Collector, Collector, Divisional Commissioner, Under Secretary, Deputy Secretary, Joint Secretary, Additional Secretary, Secretary, Director, Director General and there are many other posts at sufficiently higher level on which they are posted.

Alongwith IAS examination there are other categories of services under the Central Government for which graduates can compete. Similarly the same holds good to the State Governments too. Detailed information can be seen under the proper chapter in the book. Posts of administrative and executive nature under local bodies, statutory Government organizations are filled through advertisement, however, the level of competency remains more or less the same. Banks recruit Probationary Officers. Insurance Companies recruit their administrative staff through competitive examination.

In Private Sector the candidates are put to a severe test of selection because all these organizations are profit oriented and therefore, their primary concern is to select result oriented persons.

Other departments of the Government also offer entry posts to graduates. These may be Defence Forces, Protective Services, Para Military Organizations, Forestry, Social Welfare, Information and Broadcasting. At lower level under the Government they are considered for the posts of Upper Division Clerk, Assistants, Stenographers, Secretarial work, Sales and Marketing work, Insurance,

Accountancy. For all the details, candidates can see the appropriate chapters in the book. Since candidates are many, they have to prepare well to get through the competitive examination.

Graduates in these three disciplines can also prepare themselves further in the fields of Chartered Accountancy, Company Secretaryship, Business Management, Demography, Cost Accountancy, Actuarial Profession, Law, Foreign Trade, Rural Work, Labour and Social Welfare, Film Industry, Tourism, Archaeology, Archives, Languages, Town and Country Planning, Journalism and Allied Fields as per professional requirements. All these professions have been discussed in many of the chapters of this book. Candidates may like to go through these chapters. There are special institutions for training personnel in these fields.

There are also opportunities of higher learning in the chosen discipline in our Indian universities which lead to Master's degree courses and Doctoral courses in Commerce, Economics, Geography, Mathematics, Statistics, History, Psychology, Education, Business/Industrial Management, Public Administration, Law, Library Science, Languages, Journalism, Social and Labour Welfare, and miscellaneous subjects like Operational Research, Market Research/Research Methodology, International Law, Rural Work and Cooperation, Town and Country Planning, Museology, Labour Law and others. The opportunities for these qualified personnel too have been discussed at appropriate places in this book which may kindly be referred to by the graduates in Arts, Science and Commerce.

It is further pointed out that fresh graduates in Arts, Science and Commerce have very little to look forward as far as paid employment as well as self-employment is concerned.

In order to have an understanding of scope of employment opportunities for Arts, Commerce and Science graduates in actual numbers and in percentage form in the Public Sector as well as Private Sector, these are being given below. These employment opportunities are available in Administrative, Executive and Managerial positions and clerical and related positions for which fresh graduates in three disciplines can be considered for employment.

<i>Sector</i>	<i>Administrative, Executive & Misc. General Positions</i>	<i>Percentage to Total Employment</i>	<i>Clerical and Related Positions</i>	<i>Percentage to Total Positions</i>
Public-Sector 1978	2.18 lakh	3%	27.34 lakh	29.1%
Private Sector 1979	0.91 lakh	1.8%	6.38 lakh	12.7%

It is agreed that the information provided here is quite old. However, there may not be material change in the percentages marked out. There may be enhancement or decrease in the real numbers of employees in each sector. The above table is extracted from the publication of Directorate General of Employment and Training, Ministry of Labour, New Delhi, titled Occupational and Educational Pattern in India (Private Sector for 1979) and of the same title for Public Sector for 1978 published in 1985 and 1984 respectively. The dates of publication of these two reports are different because each sector's report is prepared biennially. It is hoped that the pattern in the percentage form may be more or less the same.

CHAPTER 47

CAREERS IN CHEMICAL ENGINEERING

The aim of manufacturing industries is to have optimum amount of product at a minimum cost. During our school days our teachers experimented in the school laboratory on various chemical substances. Even from such minor experimentation we know that there is a great deal of skill in handling chemical substances because by processes of treating them new forms and shapes are formed. Consider the aspect of such things outside the school laboratory in the practical application in big industries. Bhopal gas tragedy perhaps is the glaring example of risks involved in handling chemical substances. Industries in which certain chemical substances are being used or being manufactured have to be designed, erected and run with utmost caution and care. This is the job of Chemical Engineers.

On the strength of skill, depth of knowledge, Chemical Engineers serve industries where their contribution has resulted in their growth. Product brought out through such services of Chemical Engineers cause prosperity of the country and result into better standard of living of the people.

A Chemical Engineer is concerned with carrying out operations on a large scale that are restricted to laboratory tests. Chemical Engineering in such a situation, is devoted to design, construct and operate industrial plants. The material produced in industries may be sulphuric acid or ethylene oxide or consumer products of a variety as sugar, paints, varnishes, drugs, soaps and others. The chemical and process industries have a wide range of activities, however, a common factor in all of them is that materials are changed in their composition or physical form. In simple terms, it means application of laws of physics and chemistry and the concepts of mathematics to design, development and operation of industrial process plants. Here it may be clarified that chemical plants are those where different chemicals are produced and process plants are those where these chemicals are used to manufacture consumer goods.

Chemical Engineers are generally employed in the following types of industries

Chemical manufacture,
Heavy Chemicals—Inorganic, Organic, Industrial Gases,
Petroleum refining and petroleum chemicals,
Resins, plastics and textiles,
Fine chemicals, pharmaceuticals and dye-stuffs,
Teaching (Higher centres of learning),
Atomic energy,
Food, drink and tobacco,
Coal, coke and by-products,
Private practice (consultants),
Government research, Government service,
Metal manufacture, instrument etc.

Among all these industries the most important ones are those manufacturing fertilizers, dye-stuffs, solvents, detergents, plastics, and pharmaceutical products.

How do some of the chemical industries influence standard of living can be gauged from the following two examples

Petroleum industry is the single largest industry which employs Chemical Engineers. A slight rise in petroleum products as per the assessment of cost worked out by Chemical Engineers at the instance of Govt. sets a chain of reaction in other fields. Immediately it affects transport industry because its bill of petrol shoots up. To compensate the loss, they are left with no other choice but to increase their haulage charges, i.e., they transfer the loss to the consumers. Consumers in turn to compensate their loss increase prices of their products and services. There is, as a result, spurt in prices of every commodity on sale in the market

Food is a basic need of man. With the increase in population the food products produced at the present rate will fall too short in future. So there are constant efforts to raise the food products through using improved varieties of fertilizers bringing out quality food stuffs with nutritive contents. Chemical Engineer's contribution in this respect is quite recognisable. Weed and pest control chemicals reduce wastage of food products. Refining of sugar, baker's yeast, canning and deep freezing of fruits and vegetables are as much needed as food stuffs because not only they preserve them for a longer time but also stop their wastage and retain the nutritive values.

Chemical fermentation process has such an importance that it helps producing antibiotics and vitamins which are required for human health.

Another field of greatest importance is atomic energy which demands services of Chemical Engineers who make us available energy for our consumption and reduce load from other energy sources.

A broad spectrum is given below in which Chemical Engineers work. These are Development and Research, Administration and Management; Design, Construction, Installation and Commissioning of Plants; Plant Operation, Production, Maintenance; Technical, Sales and Services, Teaching etc.

Training—From the above skeletal discussion, it would be surmised that all these industries where chemicals are produced or used need intensively trained and skilled people. Such people are trained by a variety of institutions mentioned in the following table:

Employment—For graduates in Chemical Engineering there are many good employment opportunities at different levels.

A Opportunities in Public Sector Undertakings

(1) National Laboratories and Research Institutions

(a) *Posts*—Junior Technical Assistant, Junior Scientific Assistant, Senior Scientific Assistant, Scientist

(b) *Experience*—Two to five years experience in Rubber and Plastic Technology, Electro-Chemicals Technology and Research Development Project.

(c) *Institutions* National Chemical Laboratory, Pune; Regional Research Laboratory, Jorhat and Bhubaneswar; Central Fuel Research Institute, Dhanbad; Central Glass and Ceramic Research Institute, Calcutta

(2) Food and Fertilizer Corporations

(a) *Posts*—Assistant Project Engineer, Safety Officer, Assistant Plant Engineer, Plant Manager, Dy. Chief Engineer, Dy. Chief Industrial Engineer

(b) *Experience*—Two to 8 years in Heavy Chemical Industries, Plant and Design Process, Industrial Engineering, Process Control and Instrumentation, Refineries and Chemicals.

(c) *Institutions* The Fertilizer Corporation of India, Sindri, New Delhi, Durgapur and Barauni.

(3) Oil and Natural Gas Commission, Dehra Dun

(a) *Posts*—Junior Technical Assistant (Production), Senior Technical Assistant (Production), Junior Chemist, Assistant Engineer (Production), Executive Engineer (Reservoir) Executive Engineer (Production), Senior Scientific Officer (Oil & Analysis), Deputy Director (Chemistry).

Educational facilities at Post-Graduate and Higher Levels in Chemical Engineering/Technology in India
(There are various branches of Chemical Engineering)

<i>Sl. No.</i>	<i>Institute</i>	<i>Courses</i>	<i>Fields</i>
1.	Annamalai University, Annamalai	M Sc, Ph D	Electro Chemical Technology, Oil Technology.
2.	Ardhra University, Waltair	M Tech	Chemical Transfer
3.	A.C. College of Technology Gundy, Madras	M.Tech	Leather Technology, Textile Technology
4.	B H U, Varanasi	M Sc, Ph D D Sc.	Ceramic Engineering.
5.	Bombay University Bombay	M Sc Tech Ph D Tech	Fine Chemicals, Fats & Waxes, Intermediates and Dyes, Plastics & Rubber Technology
6.	H B. Technological Institute, Kanpur	M Sc Ph D	Applied Microbiology, Biochemical Engg., Fuels & Fuels, Oil Technology, Plastics and Rubber Technology.
7.	IIT, Madras	M Tech Ph D	Applied Microbiology, Chemical Engineering, Thermodynamics & Kinetics, Fluid Particle System, Fine Chemicals, Material Processing, Mechanical Operation, Paints & Varnishes, Particle Technology, Process Dynamic and Control

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|-----|---|-----------------------------|--|
| 8. | Indian Institute of Science,
Bangalore | M.F., M.Sc.
Ph.D., D.Sc. | Combustion Engg. Fuels & Furnaces, Plant Design,
Transfer Processes. |
| 9. | IIT, Kharagpur | M.Tech., Ph.D. | Combustion Engg. Fuel and Furnaces, Fine Chemicals,
Higher Polymer, Mass Transfer Process, Petroleum
Technology, Petro-Chemical Engineering, Plant Design,
Synthetic Drugs & Fine Chemicals, Technical Gas
Reaction and Higher Power Engineering. |
| 10. | IIT, Bombay | M.Tech., Ph.D. | Automation, Cellulose Technology, Electro Chemical
Engineering, Fertilizers, Fuels & Furnaces Marine
Chemicals, Organic Process Industries, Petroleum
Technology, Pulp & Paper Technology, Plastics & Rubber
Technology, Photochemicals, Silicate Technology, Tech-
nology of Fuels |
| 11. | IIT, Kanpur | M.Tech., Ph.D. | Applied Kinetics, Chemical Reaction, Design & Analysis,
Gas Dynamics, Process Dynamics & Control, Transfer
Process |
| 12. | IIT, Delhi | Ph.D. | Biochemical Engineering; Heat Transfer, Instru-
mentation & Control, Process Dynamics Control.
Reaction Engineering, Thermal Dynamics. |
| 13. | Jadavpur University,
Jadavpur | M.Ch.E., M.Tech | Biochemical Engineering, Combustion Engineering,
Energy & Heat Transfer Process Engineering; Food
Technology; Mass Transfer Process |
| 14. | Laxminarayan Institute of
Technology, Nagpur | M.Tech., Ph.D. | Oil Technology. |
| 15. | Osmania University,
Hyderabad | M.Tech., Ph.D. | Ceramic Engineering, Oil Technology. |

Other Specialised Courses/Training for Chemical Engineers

Sl. No.	Institute	Subject	Course	Qualification	Duration	Procedure
1.	National Dairy Research Institute, Karnal	Dairy Chemistry	M.Sc., Ph.D.	B.Sc. in Chemical Engineering	2 years	Merit & Interview
2.	National Dairy Research Institute, Bangalore	Dairy Technology	M.Sc.	"	2 years	"
3.	College of Engineering & Technology, Jadavpur University, Jadavpur	Food Technology	M.Tech	"	2 years	As above and experience
4.	Bhabha Atomic Research Centre, Trombay, Bombay	High Vacuum Technology	—	"	3 weeks	—
5.	IIT, Madras	Industrial Engg.	Post Graduate Diploma	B.Sc. in Chemical Engg and two years' experience	1 year	—
6.	National Sugar Institute, Kanpur	Industrial Fermentation & Alcohol Technology	Diploma	M. Tech in Microbiology	1 year	—
7.	H.B. Technology Institute, Nawabganj, Kanpur	Oil Technology	M.Sc.	B.Sc. Chemical Technology	1 year	—
8.	Indian Institute of Petroleum, Dehradun	Petroleum Refining & Petrochemicals	P.G. Course	B.Sc. First Class, M.Tech in Chemical Engineering	15 months	Written test and interview

			P G Course	B E 1st Class	1 year	Written Selection test
9.	Atomic Energy Establishment, Calcutta	Radiological Physics				—
10.	Indian Institute of Statistics, Calcutta	Statistical Quality Control	Diploma	B E	—	
11	Atomic Energy Establishment, Bombay	Chemical Engg.	Diploma	Degree in Chemical Engg in High 2nd class	1 year	—
12.	IIT, Madras	Research Programme in Chemical Engg.	M Sc.	1st class degree in Chemical Engg	2 years	—
13	IIT, Delhi	Fluid, Solid Mechanics & Material Science	Research	Degree in Chemical Engineering	2 3 years	—
14.	Indian Institute of Science, Bangalore	Mechanical Engg.	M Sc	2nd class Chemical Engg with 50%	—	—

(b) *Experience*—Two to 10 years in oil gas reservoir problem, Petroleum Technology, Production of oil, Colloids/Clay/Cement. Geochemistry. Drilling Fluid, Soil Water & Gas Analysis.

4. Government of India Undertakings

(a) *Posts*—Mill Foreman, Foreman, Assistant Plant Incharge, Junior Chemical Engineer, Scientific Officer Engineer, Assistant Fuel Engineer, Technical Officer, Propellant Engineer, Mill Superintendent, General Manager, Mineral Dressing Engineer, Plant Manager, Marketing Manager

(b) *Experience*—Two to 10 years in Design & Construction of Chemical Plant, Chemical Industry & Marketing, Preproducing Planning, Organization of Industries.

(c) *Organizations*—Bhabha Atomic Research Centre, Bombay; Hindustan Antibiotics Ltd, Pune; Hindustan Organic Chemicals Ltd, Kolaba; Hindustan Aeronautics Ltd., Koraput, Orissa; National News Print & Paper Mills Ltd, Napanagar; National Mineral Development Corporation, Faridabad; Sambhar Salts Ltd., Rajasthan.

(5) Drugs Antibiotics & Pharmaceuticals

(a) *Posts*—Assistant Design Engineer, Foreman Safety, Foreman Grade I, Design Engineer (Chemical Engineering)

(b) *Experience*—Two to three years in Design and Chemical Plants, Production of Fine Chemicals, Supervision of Chemical Plants.

(c) *Organizations*—Hindustan Antibiotics Ltd, Pune, Indian Drug & Pharmaceuticals Ltd, Rishikesh

(6) Posts Filled through Union Public Service Commission, New Delhi

(a) *Posts*—Assistant Research Officer, Scientific Assistant, Assistant Development Officer, Senior Scientific Officer, Project Officer.

(b) *Experience*—Three to 10 years in Production Engineering, Project Planning Process Evaluation, Development of Chemical Industries, Petro-Chemicals.

(c) *Organizations*—Directorate of Technical Development and Production, Ministry of Defence, New Delhi

Directorate General of Technical Development, Industrial Development & Indian Company Affairs, Govt. of India,

New Delhi, Indian Bureau of Mines, Ministry of Steel & Mines,
New Delhi, Ministry of Petroleum & Chemicals, New Delhi

B Employment Opportunities in Private Establishments

(a) *Posts* Plant Foreman, Junior Engineer (Chemical), Salesman, Technical Officer, Production Engineer, Foreman (Plant Shop), Chief Executive Assistant, Inspection Engineer, Sales Manager, Engineer Refining Assistant Superintendent, Project Superintendent, Senior Executive, Chemical Equipment Engineer, Production Engineer.

(b) *Experience* Adequate after degree in Chemical Engineering in various field.

(c) *Organisations* Associated Cement Corporation Ltd, Bombay, All India Industries Ltd, Sonapat, Buckingham & Co. Ltd, Madras, Cement Works Fertilizer Ltd, Vishakhapatnam, Dettl Cloth and Garment Mills, New Delhi, Vimco KCB Ltd, Madras, Gramophone Co. of India Ltd, Bombay, Glaxo Ltd, Madras, Indian Airlines Corporation, Bombay, Indian Airlines Corporation, New Delhi, I.K. Ram Kumar & Co. Kanpur, Madras, Ramkrishna Ltd, Madras, Madras Chemicals Ltd, Bangalore, New Indian Industries, Bombay, Surat, R.L. Datta & Co. Ltd, Bombay, Udaipur Cement Works, Udaipur.

C Openings for Chemical Engineers as on The Job-Trainees

Type of Positions Management Trainees, Graduate Trainees, Executive Trainees, Engineers, Trainees, Apprentices, Technicians, Assistant Plant Superintendents, Trainees, Chemical Engineers, Trainees, Technical Trainees, Technical Sales Trainees, Assistant Engineers, Supervisors, and during the training period.

Source of other organizations which employ chemical engineers.

(A) Public Sector

The Hindustan Steel Ltd, P.O. Hissar, Ranchi, Bihar,

The Hindustan Insecticides Ltd, Industrial Area, Rohtak Road,
New Delhi,

The Hindustan Insecticides Ltd, Udyog Mandal, Kerala,

The Mysore Iron & Steel Ltd, Bellary, Karnataka.

(B) Private Sector

Dunlop India Ltd, Free School Street, Calcutta.

Duncan Enfield Asian Cables Corporation Ltd, Bombay.

Hindustan Sugar Mills Ltd, Bombay.

Hindustan Lever Ltd, Bombay.

Kamani Engineering Corporation Ltd, Bombay.

Karamchand Thapar and Bros. Pvt Ltd, Calcutta.

Kirloskar Consultants Ltd, Pune.

Pfizer Private Ltd, Bombay

Sandey Wheels Ltd, Feeder Road, Durgapur.

Sarabhai Group, P. B. 12, Ahmedabad.

CHAPTER 48

CAREERS IN HORTICULTURE

People visiting Kashmir come with happy memories and joy of witnessing the Nature's beauty in beautiful scenes, landscapes, lakes, valleys, trees, flowers and emerald like greenery so fascinating to eyes that they never tire to describe the Nature's creations, perhaps, done in leisure time with utmost care and sense of beauty. The visual feast they enjoy leads them to think, 'If there is any heaven on the Earth, it is in Kashmir.' So loving is the Nature there. There is a saying. 'Art lies in concealing art'. There is absolutely no need to beautify a thing which is already naturally beautiful. The Nature is to be enjoyed in her own natural setting.

However, everybody is not lucky to visit Kashmir and obtain such a rare beauty. To offer them Kashmir-like beauty, man has created, through his imagination, Nature-like beauty, though artificially. Vrindavan Gardens in Mysore, Pinjore Gardens in Haryana, Mughal Gardens in Delhi are some of the spots where such attempts have been made and made successfully. The beauty in all these places is quite enjoyable which gives unending joy to people.

People visiting Mughal Gardens in Delhi surrounding the official residence of India's President and sprawling into several acres of land are the wonders of man's creation. Miniature trees, a variety of flowers in different colours and aroma, tiny trees with tiny fruits, ornamental shrubs and plants are so arranged and reared that some one does not want to miss the beauty and look at them without batting an eyelid. Vrindavan Gardens are a game of colours, lighting effect, choice arrangements so as to petrify the onlookers. These are the pieces of land where people, withdrawing from the ordinary rut of life visit them to retain their composure.

These wonders have been possible by the science of Horticulture. Admittedly, the Nature is the biggest horticulture. Then appear the human horticulture. Therefore, it would be of sterling interest to know what does horticulture mean and what occupational opportunities it throws open to the people.

Horticulture, a branch of agriculture is an art or science of growing fruits, flowers, vegetables and ornamental plants. No other science has such an approach to the health of people as also entertainment they enjoy through its use and application. Fruits and vegetables are not only parts of man's food but provide high percentage of nutritive values. Flowers of different varieties, colours, sizes and aroma create such an impression that provides some relief from the drudgery of life. It has also provided unending subjects for poets and authors to make use of them in their use of similes and metaphors. Wordsworth, a famous poet of nature says, "My heart dances with daffodils". Little, tiny, beautiful flowers sitting on a swing of wind zoom merrily without least care of the world which forces the poet's heart to zoom in the same way, dance in the same way. He forgets his woes, sorrows, melancholiness by seeing the carefree flowers.

Not only flowers, but plants of beauty also create the same impression, whether arranged in symmetrical form or grown in love and care. Because of merciless struggle that the man is forced to wage, he wants certain places, certain things or objects through which he can seek pleasure, get relief from the monotonous routine and drudgery. This is achievable from other sources where contribution of flowers, ornamental plants can have equal status and contribution. Again not only that these beautiful things give respite to people from their moments of tiredness but also teach some lessons of life. 'A lily of a day is fairer far in May although it grows and dies that night'. What a great potential lesson of life this line contains. Greatness is not confined to size, length or existence on the Earth without giving substantial contribution for the betterment of mankind. A short life full of activities of use has lasting values. Many people take leave of this world quite at old age but what is their contribution for the welfare of mankind. Chandrashekhar Azad, Batukeshwar Dutta, Rajguru, Bhagat Singh laid their lives pretty early at the altar of their Mother country's freedom. Who is being remembered? Whose ballads of bravery are being sung? Whose services are being extolled and eulogised? Certainly of those who met their end like a lily flower. That is the beauty. That is the honour. That is the service. That is what is required for the advancement and betterment of human race.

Horticulture, therefore, has not only to be looked as a science of the few but has a sweeping influence over all people whether its students or common people. This science, uptill now a form of agriculture, has developed into an independent science. A horticulturist is primarily concerned with a study and solution of problems connected with culture, form, seeding, growth and maintenance of fruits, flowers, vegetable farms, gardens, nurseries, designing of landscapes etc. According to the nature of work horticulturists as a common occupation group are involved in the following areas:

(1) **Research Work**—As in other sciences, research in horticulture is of utmost importance which studies problems relating to breeding, propagating, production, storage and processing of vegetables, fruits and ornamental trees. All such problems are investigated and analysed, tested and then methods are worked out to improve quality of horticulture crops. Moreover, problems of customers are also taken care of. Earlier, grapes contained seeds which were not appreciated by customers because while enjoying this fruit seeds mar it. This problem was studied to get over this and the result is that horticulture has developed a seedless variety of grapes called Thompson seedless. Likewise these people are after reducing the size of mango seed, reducing the number of guava seeds and such other problems.

Extensive experiments and investigations are being conducted to develop and improve varieties of such crops with special characteristics such as better yield and quality of seeds and fruits, resistance capacity to fight against diseases and pests, raising capacity of them to withstand inclement weather and climatic conditions and soil etc.

(2) **Extension Work**—The results of laboratory work which give concrete results and prompt their application outside the laboratory have to be propagated among other people with a view to spread their use and create awareness among people. This is done through extension work in encouraging of establishments of nurseries for rearing of quality plants, seeds, sapplings, seedlings, establish good orchards, gardens for production of fruits and vegetables suiting to local conditions of soil, climatic conditions. Under the extension programmes, these people arrange workshops, simposia, meetings, fairs, exhibitions to promote the culture of horticulture.

(3) **Culture of Gardens**—In big cities people cannot enjoy natural beauty because of close vicinity of houses, shortage of empty land. To allow them spend their hours of leisure, local authorities like municipalities, municipal corporations develop and maintain gardens, sometimes through Public Works Department or Department of Horticulture whose main job is to plan a layout and landscape of public or private gardens, supervise sowing, manuring, planting, watering, pruning and other operations to give a touch of beauty. In other places individual growers in rural or urban areas are given expert advice to special problems they encounter with regard to their gardens and orchards. Upkeep and maintenance of gardens has been the duty of horticulturists.

(4) **Culture of Nurseries**—A nursery is a place where seedlings, sapplings and grafting of plants are done. Horticulturists have been successful through the efforts of grafting to produce a fruit not heard earlier. A variety of pomato has been developed through grafting of tomato and potato. Likewise new varieties of roses are being developed by grafting different coloured roses to produce another coloured rose flowers. The seeds and sapplings are grown

in the nurseries and their supply made instantly to farmers and individual growers. Such things are reared with care and hence if reared under the given advice and instructions will bring multiplying yields.

(5) Fruit and Vegetable Preservation—Preservation of fruit and vegetable without losing their grace and nutritional values has a tremendous effect on making food available in plenty. As is well-known that 1/10 of food is lost because of rodents. We have solved such a problem to a larger extent. Likewise if we save food from allowing it to perish, that will be a net produce. There may be two ways to achieve this storing these items in cold storages and producing some other prepared food from them like jams, jellies, marmalades, pickles, chutnies for future use and relishing them. Alongwith labelling and packing them into containers or bottles also assume a special significance.

Training—Many universities especially agricultural universities offer training in horticulture in their degree classes in general or specially in horticulture. Where candidates go for general degree of Agriculture they have an option to offer horticulture as a specialization for the degree. However, in agricultural universities, Horticulture can be taken as a major subject for graduation and post-graduation. It is a three years degree course after Higher Secondary for graduation and two years more for post-graduation. Students who have passed their Higher Secondary Examination in science stream (biology group) are eligible to get admission in agricultural colleges. The degrees awarded are B Sc (Agri) or B Sc. (Horticulture). Specialised courses in Horticulture are organised by the Indian Agriculture Research Institute, New Delhi and Horticultural Department of all the agricultural universities. There are also facilities available for further research work leading to the award of Ph D degree in Horticulture.

Students who desire to prepare for a career in Horticulture have to study Horticulture as an art, its relationship with other sciences, factors influencing horticultural productivity; classification, identification; culture of vegetables, flowers, fruits and other horticultural crops; agriculture, floriculture. Students undergoing these courses have to go to fields as a part of their practical work. Indian Council of Agricultural Research have instituted a number of Junior and Senior Fellowships in Horticulture for specialised studies.

Employment—Qualified horticultural scientists can find employment with Agricultural Universities, Central Institutes under the Indian Council of Agricultural Research, State Agricultural and Horticultural Departments, Community Development Administration, Public Works Departments, Forest Departments, Irrigation Departments, Agricultural Marketing Departments, Nationalised Banks, Local-Self Governments like Municipalities and Municipal

Corporations, Public and Private establishments, Gardens, Zoos, Nurseries and Farm estates besides being appointed as teachers in schools, colleges and universities.

These people can be employed as Overseers, Research Workers, Floriculturists, Supervisors, Assistant Director, Deputy Director, Joint Director, Section Officers, Technical Assistants and Gardeners. In big cities like Delhi their work is beautifying and maintaining gardens, maintaining shrubs of variety in between the roads, parks and places of public interest. Promotional channels are available to the posts of Superintendent of Nurseries, Assistant Commissioner etc. For detailed opportunities of employment candidates may refer to a separate chapter on Careers in Agriculture in this book.

There are a good number of self-employment opportunities to the trained persons in horticulture. They can set up their own nurseries of saplings of a variety of trees, bushes, shrubs, plants, fruits, vegetables and flowers for supply on commercial basis. Since there is a stress on preservation of food they can also have their own cold storages to be given on hire to producing farmers, have their own food processing units for juices, jams etc. for sale. Nationalized banks provide financial assistance for new entrepreneurs which may be taken benefit of.

Recruitment to the higher posts under Government is done through Union Public Service Commission and for lower cadre posts it is done through the Employment Exchanges. Posts falling under the Indian Council of Agricultural Research are filled by the Council through newspaper advertisements. For posts falling under the State Governments they are filled in through the respective Public Service Commissions and Employment Exchanges respectively. Municipalities and Municipal Corporations recruit through advertisements for higher posts and Employment Exchanges for lower grade posts. In our agrarian economy these people will prove to be of much value on food front.

CHAPTER 49

CAREERS IN DEFENCE FORCES

Military preparedness is vital for a country in keeping its independence intact. Whatever philosophy a person or a country might follow it is absolutely necessary to protect ourselves from the unwarranted invasion from other country since it is not obligatory on that country's part to follow the same philosophy. In any eventuality country's defence forces are a must.

Modern warfare requires various kinds of people and weaponry to prevent any possible attack. This warfare can be fought on the ground, on the sea or in the air. Different kinds of weapons are required for the purpose and more importantly people to handle them. Therefore, defence forces put a heavy demand on country's young people to accept careers in them which are in plenty and prospective too.

India has to maintain three types of defence forces each being characteristic to a place where it is being used. No doubt, India has natural protection of the Himalayan ranges, however, modern wars have no limitations. These can be fought anywhere, in the coldest and snow clad regions, on the surface or underneath sea and in the air too. That is why there are three different wings of defence forces a country has to maintain to which India is no exception. They are Army, Navy and Air Force

Before we collect information about each of the wings, we have to look out for common requirements for all the wings. To keep the forces always young, alert and full of verve and sprightliness, it is but natural to select young people who are quite healthy to stand rigours of jobs. Physical standards have been fixed for recruitment in these forces such as height, weight, chest measurement along with other things regarding health of a person. Recruited person have to take daily exercises and drills so as to keep them on their toes. Alongwith this they are trained in various arts of warfare and given education to raise their mental level too.

Discipline in the forces is strictly watched and emphasised besides devotion to duty and obeying of orders. Disobedience of orders is taken to be treason and persons involved in breach of orders are tried seriously.

In defence forces there are occupational risks particularly during wars, infiltrations or other emergencies amounting to death

or disability. Because of nature of duties all people in the defence forces are provided free accommodation, transport, medical care, uniform, food etc.

All Indian citizens are eligible for recruitment in the defence forces without consideration of caste, creed, sect, region, religion or faith, provided they are otherwise suitable. All occupations in the defence are for male candidates only, however, female candidates can be recruited in medical and nursing occupations.

Once recruited all people become eligible to get promotions on fulfilling service conditions. Depending upon merit, qualification and training junior people can reach to officer's grades. All employees are covered by pensionary benefits, gratuity, family pension scheme (in case of death) and rehabilitation benefits on getting disabled. Two dependents (wife, children or near relatives who vow to take care of the family) are given employment under the Govt Director General of Rehabilitation in the Ministry of Defence have prepared many schemes of self-employment including agriculture and allied fields, commerce and industries, education and life insurance agencies. For officers there are schemes of business management, industrial management and others. Officers are trained in short or ad hoc courses to take up these occupations.

Besides occupations in active forces there are other occupational opportunities in civil employment like ordnance factories and depots.

With this information common to three defence forces let us now try to gather information on occupational opportunities in each of them separately. First, we will take Army, then Navy and lastly Air Force.

INDIAN ARMY

In the army there are officer ranks (who obtain commissions) and other ranks. Following are the fields in which there are career opportunities for young people.

Armed Core, Artillery, Engineering Core, Infantry, Signals Core, Army Service Core, Army Ordnance Core, Army Medical Core, Army Dental Core, Electrical and Mechanical Engineers Core, Army Educational Core, Remount Veterinary and Farm Core, Army Police Core, Defence Forces Core and Army Postal Core.

A. Commissioned Officers' Ranks

Young people who are physically and mentally alert, venturesome and possessing qualities of leadership are recruited in the army in officers' ranks for controlling and leading army people. There are numerous opportunities in the army to specialise in administrative, managerial and technical fields as for example motor transport, armament studies, engineering, radio communication and electrical etc.

Sl. No.	Institution	Age	Physical Standards		Educational Qualifications	Mode of Selection	When	
			Ht.	Wt.	Chest			
1.	National Defence Academy Khadakwasli, Pune. (For Army, Navy and Air Force.	16 to 18½ years	157.5 cm.	43.5 kg.	71-76 cm.	11th pass	Union Public Service Commission for written test and interview by Services Selection Board	Generally twice in an year—January and July
2. (a)	Indian Military Academy, Dehraoon (only for Army in non - technical branches.	19-22 years	"	"	"	Degree	"	"
(b)	Technical Graduates	20-27 years (For Army Edu. Core 23-27)	Mini. 157.5 cm. Max. 183.0 cm.	Mini. 45.5 kg. Max. 63.5	"	Engg. Degree or M. A. / M Sc	Interview by Service Selection Board.	"
(c)	Officers of the National Cadet Core	19-22	157.5 cm.	43.5 kg.	"	Degree with 'D' certificate of NCC	"	Generally in July

3. (a) Officers' Training School (Short - Service Commission, Madras (only for Army) (Non -Technical)	19-23	Min 157.5 cm. Max 183.0 cm Min 45.5 kg Max 63.5 kg	"	Degree or equivalent	Union Public Service Commission for written test and Interview by Service Selection Board	Generally twice in an year in May & October
(b) Technical	20-27	" "	"	Engg Degree, Masters Degree with Physics or Electronics	Interview by Service Selection Board	"

Note :-- (1) Age is determined on the date on which a course starts.

(2) Minimum 5 cm. difference in chest measurement before and after inflating chest at No. 2 & 3.

(3) Age and physical standards go on changing Get them verified from Army Headquarters.

(4) There is a possibility in the change of dates of written test/start of a course.

The demand of officers required is to man various organizations at different levels by inducting them into Army and Training them in special institutions intensively. Following are institutions in which training is offered. Other particulars have also been given alongwith.

1. National Defence Academy, Khadakwasla, Pune

National Defence Academy, beset into a beautiful surroundings at the foothills at Pune, is a premier institution in the country to train cadets for Army, Navy and Air Force. Cadets are recruited through UPSC as shown in the table on pages 392 and 393

The written test includes three papers viz 1. English 2. General Knowledge, and 3. Mathematics of 11th standard of 10+2 pattern. Candidates declared successful in the test are later interviewed by the Services Selection Board. During interview they are tested in group discussion and physical strength, endurance, intelligence to find out whether they are capable of becoming leaders. Final selection rests on medical fitness.

Candidates are allotted to different wings as per their preference and test results.

The course in the Academy is of three years. The Govt. incurs all the expenditure of lodging, boarding, medical care, uniform, books etc. Cadets are allowed to keep that much money with them which is normally sufficient for meeting ordinary requirements. Cadets belonging to poor families can be paid pocket allowance on production of a certificate from district magistrate. Many State Govt. give stipend to cadets of their states.

Life in the Academy is balanced with work and play. The course contents include educational subjects and military science. Games are compulsory. The course is of degree standard and after successful completion of it cadets are awarded degrees in Arts or Science as the case may be, by the Jawaharlal Nehru University, Delhi.

After the successful completion of the course cadets join other institutions. Army cadets go to Indian Military Academy, Dehradun, Naval cadets go to training ships and establishments and Air Force cadets join Air Force Academy, Hyderabad

Army cadets are commissioned after completing one year course in the Indian Military Academy after which they are offered the rank of Second Lieutenant.

Naval candidates are trained for six months on a training ship. Then they are offered the rank of Midshipman. After training in respective branches for 12 months these cadets are promoted to the rank of sub-Lieutenant.

Air Force cadets have to complete one year course of aircraft flying at Air Force Academy, Hyderabad. They then are

offered the rank of Pilot officer. If any candidate does not show appropriate interest, they are further trained in navigation, administration and logistics for a period of 12 to 18 months. After this they are offered the rank of Pilot Officer.

2. Indian Military Academy, Dehradun

Direct entry of civilians—To enter into this Academy candidates have to appear for a written test in English, General Knowledge and Elementary Mathematics as compulsories and one of many subjects as optional. The standard of the subjects are of degree level—except Elementary mathematics which is of 11th standard.

The course is of two years. Other facilities are just like that are offered to NDA cadets.

Technical Graduates—There is no competitive examination for entry of these candidates in the Academy. Married candidates are eligible. However, unmarried candidates are not allowed to marry for one year which is the duration of the course. These cadets are offered the rank of Second Lieutenant on probation under Short Service Commissioned Officers Scheme. They are given advance promotions, seniority and increments two years before the date of commissioning. The Govt incurs all expenditure of their training.

NCC Cadets—These cadets are trained for 18 months. The Directorate General of NCC recommends candidates through Commanding Officers of Local NCC units to Army Headquarters. There is no competitive examination for selection of these people but they have to pass intelligence and personality tests. After training they are offered regular commissions. All expenditure on training is borne by the Govt.

3 Officers Training School, Madras

Short Service Commission (Non-Technical)—Written test is in English, General knowledge and current events. Thereafter, they are further tested in intelligence and personality traits. On successful completion of the course, they are offered short service commission initially for two years but can be further extended for another five years. Permanent commission can also be offered. Probation period is of six months.

Short Service Commission (Technical)—Civilians including NCC Cadets, temporary employees under the Govt. or public sector organizations, regular defence employees, members of Territorial Army, Naval or Air Force employees possessing degree in Engineering or Master's degree in Physics are eligible. Marriage is no bar but unmarried candidates are not allowed to get married during the course. Engineering graduates are offered the rank of second lieutenant even during the period of training or probation. Training is of 44 weeks. Other conditions are the same as are applicable to non-technical commissioned officers.

PROMOTIONS

Promotions are offered in two ways as shown below :

(i) *Periodic Promotions*

<i>Rank</i>	<i>Service limit</i>
Lieutenant	Two years after commission
Captain	Six " " "
Major	Thirteen " " "
Lieutenant Colonel	24 " " " if not promoted through selection

(ii) *Promotion by Selection*

Lieutenant Colonel	16 years after commission
Colonel	20 " " "
Brigadier	23 " " "
Major General	25 " " "
Lieutenant General	28 " " "
General	no limits

Non-commissioned defence forces employees have opportunities of promotion. Those employees—Junior Commissioned Officers or Non-commissioned Officers or Lance Naiks—having 2 years minimum service in the Army or 4 years in Territorial Army are considered for promotion to the officers' ranks provided they are within the age-group of 19½-24 years, provided further that they are recommended by their units. They have to clear written exam after which they are interviewed. They are trained for three years in Army Cadet College, Pune. Before they are offered promotion to the rank of Second Lieutenant they have to complete one year training course in Indian Military Academy, Dehradun.

Salary and Allowances—Officers in the Defence Forces are offered good salary. In addition, they draw various allowances such as dearness allowance, kit allowance, uniform allowance, separation allowance, free single accommodation, house rent allowance and subsidised electricity concession when placed at war fields, Leave Travel concession, Non-Practising Allowance etc.

They also enjoy pensionary benefits, gratuity, disability pension, ordinary family pension, death-cum-retirement benefits etc. The rate of all these salaries and allowances go on changing from time to time and hence they cannot be given here. Candidates should collect information from the original sources.

Commission in other Branches—Young people fulfilling conditions can get commission in the Army Medical Core, Military Nursing Core, Remount Veterinary Core and Dental Core. For

permanent commissions in these cores graduates, post-graduates diploma/degree holders the age limit is 30, 31 and 32 respectively. Professionals in these fields having five years experience in a recognised institution can get age relaxation up to their age of 36 years. For short service commission the age limit is up to 45 years. Other source of entering into Army Medical Core is through Armed Forces Medical College information on which has been given in the chapter on Careers in Medicine in this book. These officers enjoy all the benefits that are available to other types of officers.

Military Nursing Service—This is an integrated part of Defence Forces. Nursing personnel in this service enjoy all benefits like officers of other ranks—women—unmarried, divorced or separated (including widow without incumbrances) are eligible. Qualified nurses within the age-group of 21-35 can seek commissions in this service subject to medical fitness. Armed Forces Medical College, Pune also conducts the course in Nursing besides certificate course in Nursing are available in Army hospitals at Jalandhar, Delhi Cantt., Lucknow, Bangalore, Secunderabad, Bombay and Calcutta. These courses are of three year duration. Age limit is 17 to 25. Women candidates who have secured 50% marks in the SSC exam are eligible to apply.

Veterinary Core—Persons holding a degree in Veterinary science and are within age group of 21-30 can enter into this service. Short Service Commission can be given up to the age of 35 years. Selected candidates have to undergo 6 months training at V C Centre & School, Meerut Cantt.

Army Dental Core—Qualified persons in dentistry and below 45 years of age can seek Short Service Commission in the Army Dental Core. Initial Commission is for three years which can be extended for another five years. They also get opportunities of permanent commissions. These people also enjoy all the benefits that are available to officers of other ranks.

OTHER RANKS IN THE ARMY

There are ranks in the Army as Naib Subedar, Subedar, Subedar Major who are called Junior Commissioned Officers. They are not directly recruited in these ranks. They are promoted from non commissioned ranks and soldiers. Young people are recruited and given training. Recruitment of these people is made by recruiting offices established in the country. The details are as below :

<i>Rank</i>	<i>Educational Qualifications</i>	<i>Age</i>
Combatants	5th class pass	17-21 years
Non-combatants	No bar	17-24 years
Boys	4th to 8th class pass	14½ to 15½ years.

There are a number of trades in which recruited people are trained after they finish their military training. These trades are mentioned below:

Craftsmen, Signal Foreman, Radiographer clerk, Mechanic, Draughtsman, Armourer, Machine Mistry, Fitter, Turner, Welder, Driver, Army Police, Lineman, Postman, Engine Attendant, Packer etc.

Candidates will have to collect more details from the recruiting offices. There are definitely good career opportunities to these people.

Career Opportunities in Ordnance Factories of the Defence Forces—To make supply of weapons and arms to the defence forces there are factories to produce or manufacture these things where civilian employment opportunities are available to all types of educationally and technically qualified people. There are 28 such ordnance factories in the country which employ more than 1.5 lakh people in different categories. In addition to these factories there are some Public Sector Projects which meet requirements of all the wings of defence forces. They are mentioned below :

1. Hindustan Aeronautics Ltd., Bangalore.
2. Bharat Electronics Ltd., Bangalore.
3. Mazgaon Dock Ltd., Bombay.
4. Garden Reach Workshop Ltd., Calcutta.
5. Praga Tools Ltd. Secunderabad.
6. Bharat Earth Movers Ltd., Bangalore.
7. Goa Shipyard Ltd., Goa.
8. Bharat Dynamics Ltd., Hyderabad.

In all these factories more than 75,000 people have been employed. There are also opportunities of training of people like Craftsman, Supervisor, Draughtsman, Chargeman, Instructor and Assistant Manager. Employment opportunities are Assistant Manager/Technical Staff Officer, Dy. Manager/Dy. Assistant Director General, Manager/Senior Dy. Assistant Director General, Director General, Gr. II/Assistant Director General Gr. II, Assistant Director General Gr. I., Dy. Director General, Manager General (Selection Grade), Additional Director General and Director General. These are in the technical branches of the factories.

In the Ordnance Factories administrative posts are held by people selected for Indian Ordnance Factories Service (non-technical). They hold the posts of Manager General, Manager General Gr. II, Manager General Gr. I and Manager General, (Selection Grade). Non-gazetted posts are Supervisor 'A' & 'B', Chargeman (non-technical), Chargeman Gr. I/Assistant Foreman, Foreman (non-technical).

All these employees are governed by the rules and regulations of the Central Govt. applicable to other Central Govt. Employees.

All these Ordnance Factories are under the Defence Production Department of the Defence Ministry.

Candidates are advised to seek detailed information from the original source like advertisement in the newspapers or get in touch with Personnel Dept. of the respective factories

To recruit persons in the Army there are a number of recruiting offices in the country. They are at Amritsar, Ambala, Agra, Ajmer, Almoda, Alwar, Aurangabad, Ahmedabad, Bareilly, Bhopal, Bombay, Belgaum, Bangalore, Churkhy Dadri, Calcutta, Cuttack, Delhi, Dimapur Cantt, Ernakulam, Ferozepur, Aravalis, Gudgaon, Gauhati, Guntur, Dhum, Hamirpur, Indore, Jalandhar, Jammu, Jorhat, Jodhpur, Zunzunu, Jabalpur, Kota, Kanaraghat, Ludhiana, Lansdowne, Lucknow, Meerut, Muzaffarpur, Murshidabad, Madras, Nagpur, Pune, Palampur, Patiala, Rohtak, Ranchi, Rajkot, Srinagar, Simla, Shillong, Silchar, Siliguri, Safara, Secunderabad, Tiruchirappalli and Varanasi.

Every morning recruitment is made out of candidates who present themselves to the recruiting offices on the basis of physical tests. Candidates should take educational certificate and age certificate alongwith them so that there would not be any difficulty in recruitment. Selection of candidates is made subject to medical fitness.

To serve in the Army is an honour by itself. All sorts of training facilities are available in the army suitable to candidates' educational qualifications and depending upon attitudes they possess.

To keep the element of youthfulness in the Army these people are retired at a pretty young age. However, Govt. tries to re-employ them in the civilian employment at appropriate level. Certain posts in Group 'C' and 'D' are reserved for them. The detailed information about concessions to ex-servicemen are given in a separate chapter in this book. Service to the nation has no equal and hence these people have a place of honour and dignity.

NAVY

The major function of Indian Navy is to protect sea coast spread over 5,700 kms in the Arabian sea and Bay of Bengal. Because of its modernization Indian Navy now is not only capable of action on the surface of the sea but also in the air through its aircraft carrier ships and under it through its submarines.

Young people healthy in all respects and possess liking for sea life can join the Indian Navy in various capacities depending upon educational level attained by them. There are six branches of Indian Navy: (1) Executive, (2) Engineering, (3) Electrical, (4) Supply

and Secretarial, (5) Educational (Instructors) and (6) Medical Officers inducted into Army Medical Core can also join in Naval Medical branch. There are no opportunities of careers for women in the Indian Navy. Officers in the Executive branch are responsible for keeping the naval force quite alert and use of arms appropriately and navigation of ships and boats. Officers in Engineering branch look after ship machinery and maintenance of ships. Electrical problems are looked after by officers in the Electrical branch. Officers in supply and secretariat branch take care of stores, payment and accounts. The work of education of naval soldiers is entrusted to officers in the Educational branch. In addition, they conduct classes in map reading and foreign languages.

Recruitment—Commissioned officers are recruited from various sources. All these recruited people have to be alert on all times because of the long stretched coastline of India. As is well known India is surrounded from three sides by sea and hence, there is a greater possibility of attacks from sea. To take care of the coastline of 5,700 kms is not a simple proposition because every now and then there is a fear of infiltration. Aircrafts moving in the air can be sighted, movement on the ground can also be sighted but such movements under the sea cannot be located. Hence, detection of any untoward activities becomes largely impossible. However, a trained eye can do all these things. This is being done by the Indian Naval personnel who have been intensively trained in different branches at the different institutions shown in the table given on pages 401 to 403.

1. National Defence Academy—Information about this Academy has already been given under INDIAN ARMY.

2. Naval Academy, Cochin—Written examination is held in General English, General Knowledge, Maths and Physics. During interview candidates are tested in group discussions and intelligence. Those become successful are selected subject to medical fitness.

Selected candidates are put under training as cadets in naval executive branch for 12 months. All the expenditure is borne by the Govt. Other conditions are just like that for NDA candidates. Candidates are further trained on ships and in naval establishments. Here also expenditure incurred on training is borne by the Govt. The training is for six months. Thereafter, cadets are given the rank of Midshipman and thus they start earning their full salary and other allowances.

3. Direct Recruitment in the Navy—There is no written test for recruitment in various branches of Indian Navy for direct Commissions. After completion of the course candidates are put on probation for two years on the posts of Executive Sub-Lieutenant. This does not include officers in Educational branch for whom probation period is of one year duration.

Sl. No.	Institution	Age	Physical Standards Ht. Wt. chest	Educational Qualifications	Mode of Selection	When
1.	National Defence Academy, Pune (a) Regular Recruitment (b) Special Recruitment for m NCC cadets.	16 ¹ / ₂ — 18 ¹ / ₂ 17 to 20	As for As for Army As for Army	11th class pass UPSC written test and Interview by year in January and Service Selection Board July	UPSC written test and Interview by Service Selection Board Interview by Service Selection Board Intermediate with Science + NCC 'C' certificate. Two yrs. experience in Senior Division of Naval wing of NCC	—
2.	Nava Academy, Cochin, Indian Navy (Executive Branch).	19 to 22	Min. 57.5 cms. Max. 180.0 cms. Min. 47 kg. Max. 67 kg. 5 cm. difference between normal and inflated chest	Engg. or graduation in Maths and Physics	Degree UPSC written test and Interview by Service Selection Board	Course generally starts in January/July every year

Sl. No.	Institution	Age	Physical Standards Ht. Wt. chest	Educational Qualifications	Mode of Selection	When
3.	Direct commissions	20 to 30	—	—	Interview by Ser- vice Selection Board	Course gene- rally starts in January/ July every year
	(a) Executive Branch	19½ to 25	—	—	Certificate of Second Mate, vices Mate of Trans- port Communi- cation Ministry	
			—	Degree in Maths and Physics		
	(b) Engineering Branch	19½ to 30	—	—	Certificate of Second Mate, Mate of Trans. & Communica- tion Ministry	"
		19½ to 25	—	—	Degree in Mech. Engg. or Ship Engg.	"
	(c) Electrical Branch	19½ to 25	—	—	Degree in Elec- trical / Electro- nics / Communi- cation	"
	(d) Supply & Secreta- riat Branch	19½ to 25	—	—	Degree in Arts, Science, Com- merce, Law or Accounts	"

(e) Educational Branch	21 to 25	—	—	—	First class degree Degree in Matl Sc in first second class M A (Eng) in second class with Phy & Maths upto intermediate M Sc in Maths & Chem, B E. (Ele & Mech)
4. University Recruitment (For electrical & Engineering branches)	18½ to 23½	—	—	—	Last yr. students of Mech, Elec Electronics, Comm, Engg as above
5. Naval Aircraft Director Cadet Recruitment	17½ to 21	—	—	—	Intermediate, should have studied Phy. & Maths upto 11th
6. Navy Core	Constructors' 21 to 25	—	—	—	Degree in Naval Naval Archi- tect, Aero-nau- tical Engg. Metallurgy, Mech. Engg
					Selection
					As and when advised
					Recruitment Parties visit Colleges
					"
					"

Training period varies from branch to branch. Such training is offered in the following establishments:

1. Indian Naval Ship, Vendurati, Cochin.
2. Indian Naval Ship, Circar, Vishakhapatnam.
3. Indian Naval Ship, Shivaji, Lonavala.
4. Indian Naval Ship, Hamla, Jamnagar.

Sometimes candidates are trained in more than one establishment.

4. University Recruitment Scheme—This is to meet shortage of officers in Electrical and Engineering branches. Selected candidates in Engineering branch are sent for training of 80 weeks to INS Vendurati, INS Shivaji or other ships and candidates selected for Electrical branch are trained at INS Valsura. They are offered permanent commissions on a probation of two years.

5. Naval Aviation Cadets—Selected candidates are trained for 11 weeks at INS Garud in naval navigation and aircraft maintenance. Thereafter, they are further trained for six months at Air Force Elementary Flying School, Bijar (Karnatak). After completion of the course successfully they are appointed as Midshipman and have to undergo further training of 12 months at Indian Air Force Academy, Dindigul (Hyderabad) and Fighter Training Wing, Hakimpeth (Hyderabad). After this they are appointed as Executive Sub-Lieutenants under short service commission and put on probation for $2\frac{1}{2}$ years.

6. Naval Ship Inspectors' Core—These people are offered permanent commissions. They are appointed as Executive Sub-Lieutenants on probation for a period of two years. They have to complete a course of 9 weeks in naval navigation at INS Vendurati and thereafter, have to complete a post-graduate Diploma Course of two years (DIIT) in Naval Ship Inspecting at Indian Institute of Technology, Kharagpur. After completion of one year of this training they are made permanent in the post of Sub-Lieutenant.

The above short description will give an idea as to what is in store for engineering and other graduates so far as careers in Indian Navy are concerned.

Promotions—Periodic promotions are granted up to the rank of Lieutenant Commander. Thereafter, promotions are given through selection method. Promotions are automatic depending upon years of service as shown in the following table.

A) Periodic Promotions

<i>Rank</i>	<i>Service limit</i>
Midshipman to Executive Sub-Lieutenant	One year
Executive Sub-Lieutenant to Sub-Lieutenant	60 weeks

Sub-Lieutenant to Lieutenant	3 yrs.
Lieutenant to Lieutenant Commander	8 yrs. seniority as Lieutenant
Lieutenant Commander to Commander	24 years commuted commissioned service

B) Promotions by Selection

- (i) Lieutenant Commander to Commander
 - (a) Executive Branch 2-8 yrs. seniority as Lieutenant Commander
 - (b) Engineering & Electrical Branch 2-10 yrs. seniority as Lieutenant Commander
 - (c) Supply & Secretariat Branch 4-10 yrs. seniority as Lieutenant Commander
- (ii) Captain 4 yrs. seniority as Commander
- (iii) Assistant Naval Chief No limit
- (iv) Vice-Chief No limit
- (v) Chief No limit

In addition to salary these officers draw various allowances as are applicable to officers in the Indian Army. However, Naval officers additionally get sub-marine and surveillance allowances.

Non-Commissioned Ranks (Sailors)

Recruitment of sailors in the Indian Navy is done through Naval Recruiting offices situated at different places in the country. At present such offices are at Jalandhar, Amritsar, Patiala, Ferozepur, Ludhiana, Jammu, Srinagar, Ambala, Delhi, Rohtak, Palampur, Gurgaon, Churkhidadri, Hamirpur, Simla, Lucknow, Meerut, Varanasi, Almora, Lansdowne, Agra, Bareilly, Calcutta, Ranchi, Patna, Cuttack, Muzaffarpur, Jalpaiguri, Murshidabad, Shillong, Gauhati, Silchar, Jorhat, Ajmer, Jodhpur, Jabalpur, Indore, Gwalior, Bhopal, Zunzunu, Kota, Alwar, Pune, Bombay, Nagpur, Ahmedabad, Satara, Rajkot, Aurangabad, Bangalore, Guntur, Madras, Secunderabad, Belgaum, Tiruchirpalli, Calicut, Kunara-ghat, Dhum.

The recruiting parties move from place to place for the purpose and their programmes are published in advance in the newspapers.

After imparting training the sailors are divided broadly in two groups of trades namely skilled and unskilled.

Recruitment in the Indian Navy is done through three ways : Boys, direct recruitment of sailors and skilled personnel.

Recruitment of Boys has been discussed under Chapter on Careers for Non-SSCs.

Direct recruitment in Electrical and communication branch is done out of candidates who are within the age-group of 17 to 20 and have passed SSC exam. with science subjects. But for other branches, such as Stores, Sick Berth science subjects are not necessary. Candidates will have to pass Naval Entrance Examination in English.

Candidates desirous of becoming skilled craftsmen should be within the age-group of 15 to 17½ years and should have passed SSC Exam. They will have to pass the Naval Entrance Examination in English, Maths and General Science. Then they are interviewed. Final selection rests with medical fitness. Married candidates are no. eligible.

Duties expected to be performed by these people in different branches are given below:

1. Electrical Branch—There are two divisions in this branch. (a) Power and (b) Radio. Accordingly skilled persons working in them are called Electrical Mechanic (Power) and Electrical Mechanic (Radio). The first mechanic repairs electrical equipments and the other looks after their maintenance.

2. Communications Branch—Sailors in the branch are trained in wireless receivers and transmitters. They have to codify, decodify messages. They send messages from one ship to another ship through wireless and radio telephones as also receive them.

3. Sick Birth Branch—These sailors have to work in any one of the occupations as Physical treatment and nursing, radiography (X-ray technician), Laboratory technician, operation theatre technician, dental technician, bloodbank assistant etc.

4. Clerical Branch—These sailors perform accounts and other routine clerical jobs.

5. Stores—The work involves management classification and maintenance of foodstuffs, hardware, paints etc. Stores assistant, Storekeeper, Store Supervisor are jobs performed by sailors in this branch.

Promotions—There is a chain of promotions to the sailors. They are : Pre-training sailors, Post-training seamen, seamen, chief seamen, Petty officer, Chief Petty Officer, Master-Chief Petty Officer Gr. II and Master Chief Petty Officer Gr. I.

Commissions to serving sailors are also offered on the recommendation of commanding officers. Those who are eligible for commission are initially selected by a Preliminary Selection Board and then are allowed to appear for interview by the Services Selection Board. The details are as follows.

(1) Communication Branch Sailors below the age of 22 years are considered for commissions in the Executive Branch. Before they are promoted to the rank of Executive Sub-Lieutenant they are trained for 43 weeks at INS Vendurati, Cochin and further trained for 15 weeks on a ship.

(2) Sailors of Clerical and Stores Branches below 22 yrs. of age are considered for commissions in Supply and Secretariat Branch. They are trained for 28 weeks at INS Vendurati and another 30 weeks at INS Hamla before they are offered the rank of Sub-Lieutenants.

(3) Mistry and/or aircraft Mistry below the age of 20 years are eligible for commissions in the Engineering Branch. They are trained for 28 weeks at INS Vendurati before posted as Executive Sub-Lieutenants

(4) Unskilled sailors, after 16 years of service become eligible for Master Chief Petty Officer I.

All these sailors get good salary and other allowances that are given to Army personnel.

So there are a good number of career opportunities in the Indian Navy. Candidates should try to gather more and more information before deciding upon a career in the Indian Navy.

INDIAN AIR FORCE

Indian Air Force service is highly technical. Its each employee is a skilled person: be it a pilot, navigator or technician/non-technical airman. With the development over the years Indian Air Force has grown into its present size including wings of transportation, fighter bombers, helicopters etc.

Commissioned Officers in the Indian Air Force

Branches—There are two main branches. Flight branch and Ground Branch. In each branch there are sub-divisions such as Flight Branch—a) Pilot b) Navigator.

Ground Branch: There are two wings of this branch as shown in the table:

Technical Wing

- (a) Aeronautical Engineering
(Electronics)
- (b) Aeronautical Engineering
(Mechanical)

Non-technical Wing

- (a) Administrative
- (b) Logistics
- (c) Education
- (d) Accounts
- (e) Meteorology
- (f) Medical & Dental

These branches offer so many employment opportunities to professionally and technically qualified people in engineering, medicine, accounting, teaching and others.

Training Opportunities in Indian Air Force

Sl. No.	Wings	Age	Ht.	Wt.	Chest	Educational Qualifications	Mode of Selection	Date
1.	Flying wing							
a)	National Defence Academy	16 to 18½	Min 162-56 Max 190-50 cm	Commen- su-rate to age and physique	Not be- low 81 20 cm when inflated	11th pass	UPSC written test and inter- view by Ser- vices Selection Board.	Twice in an year in Jan- 2 July
b)	NCC	17½ to 21	"	"	"	Intermediate with 'C' certificate of NCC	Interview by Air Force Selection Board	"
c)	Serving Airmen	17½ to 21	"	"	"	SSC passed	"	"
2.	Technical Branches	18 to 28	Min 157-48	"	"	Degree in first or high second class in Electronics/ Commun. / Elec- trical	"	Generally starts in Jan./ July every year
3.	Non-technical Branches							
a)	Administrative	21 to 23	"	"	"	B A (Hons) / B. Sc. (Hons) MA. M Sc LLB	"	"

b) Logistics	21 to 23	"	"	Honours Graduate or higher degree	"	"
c) Education	21 to 25 Higher qualifications (28 yrs)	"	"	Honours degree + teaching degree diploma + 2 yrs. experience B.E. Aeronautics/Wireless Mech	"	"
d) Accounts	21 to 23 Highly qualified (25 & 27)	"	"	B.Com. chartered Accountant	"	"
e) Meteorology	20 to 25 Highly qualified (28)	"	"	First Second class degree in Physics/ Applied Phys./ Meteorology/ Geophy./ Maths	"	"

Note :—(1) Chest inflation difference should be 5.08 cms.
 (2) Colour discrimination normal.
 (3) Urine without sugar.

1. National Defence Academy—Information on this has already been given in this chapter only. However, Cadets chosen for Air Force have to pass Pilot's Aptitude test. The aim of this test is to know about coordination, reactions and sight of future pilots. Once failed in the test candidates are not allowed to take for a second time. Cadets after completing NDA course are sent for further training of 75 weeks at Hakimpeth. Cadets unsuccessful to become Flying Duty Pilots are considered for navigation branch because there is no direct recruitment in it.

2. NCC Cadets—Cadets of Air Wing of the NCC are chosen by Director General of NCC with the help of NCC units. Final selection is made by the Air Force Selection Board on the basis of intelligence test and interview.

3. Serving Airmen—Those serving men who are SSC passed and fulfil other conditions are selected by the Air Force Selection Board on the basis of intelligence test and interview. Finally selected candidates of the three types above are trained just as training is offered at Air Force Technical College, Jallahali, Bangalore and Fighter Training Wing, Hakimpeth.

Technical Branches These branches include Aeronautical Engineering (Electronics) and Aeronautical Engineering (Mechanical). Candidates holding a Bachelor's Degree in Electronics, Communication Electrical and are within the age group of 18 to 28 are eligible to enter these branches. They have to appear for a written test and interview before the Air Force Selection Board. Courses start in January/July each year at Air Force Technical College, Jallahali, Bangalore.

Non Technical Branches — These include administrative, Management, Education, Accounts and Meteorology branches. Candidates have to appear for a written test and interview before the Air Force Selection Board. Selected candidates are sent for training of 52 weeks at Air Force Training College, Coimbatore in January/July each year.

Generally training periods are as stated below

1. National Defence Academy	5 years
2. Flying Branch (Pilot)	75 weeks
3. Flying Branch (Navigation)	75 weeks
4. Technical Branches	74 weeks
5. Non-Technical Branches	52 weeks

Flying Branches—On successful completion of training candidates are offered permanent commissions in the Pilot officer's rank on a probation of six months.

Technical Branches—On completion of training course candidates are offered permanent commissions in the Pilot officer's rank on a probation of 26 weeks.

Non-Technical Branches—During training period all candidates are given the status of Flight Cadets (except Technology and Meteorological branches). On completion of training they are offered permanent commissions in the rank of Pilot officers on a probation of six months.

Candidates selected for Meteorological and Technological branches on reporting for basic course are offered short service commission in the rank of Pilot Officer on probation. On completion of basic training course and after 4 weeks they are sent for special training of 22 weeks. After successful completion of the course they are confirmed in the rank of Pilot Officer.

Post-Graduate Courses—Technical officers, based on merit and suitability are sent for training at the cost of Air Force for post-graduate studies in India and foreign countries. During training they are treated as on duty and draw full salary and allowances and also enjoy other benefits.

Promotions - There are promotional opportunities as indicated in the following table:

(A) Periodic Promotion

<i>Rank</i>	<i>Minimum Service</i>
Flying Officer	One year after commission
Flight Lieutenant	5 yrs. after commission
Squadron Leader	11 yrs. after commission

(B) Promotion by Selection

Wing Commander	3 yrs. as squadron Leader
Group Captain	4 yrs. as Wing Commander
Air Commodore	3 yrs. as Group Captain
Air Vice Marshall	3 yrs. as Air Commodore
Air Chief Marshall	No limit

Salary is good. Other allowances are the same as are drawn by the Army officers. In addition, officers in the Flying Branch are given Flight Allowance. They are covered by pensionary and other retirement benefits as are available to officers in the Army. After retirement, these officers can get employment in Air Service companies on attractive terms.

AIRMEN

Other ranks in the Indian Air Force are called Airmen. They are taught various technical and non-technical trades free of cost. The groups of trades are given below along with details thereof.

<i>Trade/Group</i>	<i>Age</i>	<i>Educational Qualifications</i>
Electrical and machine repairer Gr. I	18 to 23	SSC with science subjects + Diploma in second class, ITI certificate in second class
Blacksmith, welder and all trades of Gr. II ex- cept Edu. Instructors	16 to 20	SSC with Physics & Chemistry
Edu. Instructors Gr. II	20 to 25 M.A./M.Sc. in second class (28)	B.A. (Hons) B.Sc. (Hons) + Degree/Diploma in Teaching B.A./ B.Sc. with 1 year exp in teaching
Gr. III & IV all trades	16 to 20	SSC or its equivalent

Physical standards—These standards are the same for all the groups. Candidates should be free from any disease. Other conditions of physique are as follows.

Ht.—152.40 cms. excepting certain occupations and people.

Wt.—Min- 47.67 kg.

Chest—Min. 81.20 cms. should inflate by 5.08 cm

Duration of training varies from trade to trade. At the end of the course those Airmen who obtain more than 80 % marks they attain the ranks of leading Aircraftsman.

Promotions—Promotions are based on years of service, merit and passing of certain examinations. Airmen of and below the level of Corporal who are alert and best ones, are considered for commissioned ranks (excepting Flying Branch) provided they are below the age of 32 years, possess relevant engineering degree. Airmen above the rank of sergeant are also considered for commissions in all the branches excepting technical and flying branches, provided they are below 40 years of age.

Those who become eligible for promotion have to appear for a written test and successful candidates are interviewed by Services Selection Board for final selection.

Promotional opportunities for Air Craftsman II are Aircraftsman I, Leading Craftsmen Corporal, Sergeant, Flight Sergeant, Warrant Officer and Master Warrant Officer.

All these Airmen receive good salary and allowances as other defence employees get.

Following is a table which gives groups and trades to which Airmen can be selected.

<i>Group I</i>	<i>Group II</i>	<i>Group III</i>	<i>Group IV</i>
Fitter II Engine	Flight Mechanic Engine	Accounts Clerk	Ground Training Instructor
Fitter II Air frame	Flight Mechanic Air frame	Pay & Accounts Clerk	Indian Air Force Police
Reader Mechanic	Radar Operator	Stores and Accounts Clerk	—
Wireless operator	Wireless Operator	General Duty Clerk	—
Mechanic I	Mechanic II	Stores Assistant	—
Equipment Repairer I	Equipment Repairer II	Clinical Assistant	—
Electrical Mistry I	Electrical Mistry II	Telephonist (R J)	—
Fitter Armourer	Armourer	Operator	—
	Mechanic (Machine)	Flight Plotter	—
Fitter (Mechanic)	Auto-Mechanic	—	—
Automobile Mechanic, Tool Setter and Operator	Turner	—	—
Photo Mechanic	Photographer		—
Carpenter Joiner	Carpenter II		—
Blacksmith and Welder	Air Field Security Operator		—
Sheet Metal worker Fitter I	Meteorological Assistant Stores Security Attendant	—	—
—	Fdu Instructor	—	—
—	Cristographer	—	—

Following table indicates Recruiting offices for recruitment of Airmen with addresses and jurisdiction.

<i>Sl. No.</i>	<i>Recruiting Office</i>	<i>Jurisdiction</i>
1.	48, Mansfield Road Ambala, Haryana	Jammu & Kashmir, Punjab, Himachal Pradesh, Harayana (Except Gurgaon, Rohtak Districts)
2.	No. 1, Cubban Road, Bangalore (Karnataka)	Kerala and Karnataka.
3.	Nirangan Building, Fourth Floor, 99 Marine Lines (West) Marine Lines Railway Station, Bombay.	Maharashtra, Gujarat and Goa, Daman and Diu.
4.	Air Force Recruiting Office, Bhubaneswar (Orissa)	--
5.	Phase No. 3, M.S.C. Bose Road, P.O. Regent Park, Calcutta	West Bengal
6.	Assam Area, Ujjan Bazar, Gauhati (Assam)	Assam, Nagaland, Meghalaya Manipur and Tripura
7.	Old Pali Road, Jodhpur, Rajasthan	Rajasthan
8.	Mukerjee Camp, Kanpur Cantt, (UP)	Madhya Pradesh, Uttar Pradesh (Excepting Meerut, Bareilly and Kumoun Divisions and Aligarh and Mathura Districts)
9.	Air Force Station, New Delhi	Delhi, Rohtak & Gurgaon Districts of Harayana, Meerut, Bareilly, Kumoun Divisions and Aligarh and Mathura Districts of U P
10.	Anugrih Narayan Path Kadam Kunwa Area, Patna, Bihar	Bihar
11.	Air Force Station, Begampeth, Andhra Pradesh	Andhra Pradesh
12.	Air Force Station, Tambaram, Madras, Tamil Nadu.	Tamil Nadu

Careers in Defence Forces are not only attractive but they also offer opportunities to young people to their Motherland from external aggression. It is a great honour bestowed on young people who serve in the Defence Forces and allow country's citizens enjoy freedom and liberty. No doubt, there are hazards and rigours of careers in these forces however, satisfaction drawn from the service is unmatched. Young people should, therefore, try first to get entry into Defence Forces.

CHAPTER 50

CAREERS IN MINING

Agricultural sector meets needs of human beings with regard to hunger and thirst. After quenching these primary needs man wants to quench other higher order needs. One of the principal sources of such needs is mining industry which makes supplies of natural deposits rich in content and value. From the crust of the Earth agricultural produce of variety is obtained. If we go deep into the Earth to obtain the natural deposits, these efforts fall under the mining industry.

There are several natural items which are also called minerals. These are Coal, Copper Ore, Chromite, Diamond, Gold, Gypsum. Iron ore, Lime Stone, Magnesite, Manganese Ore, Mica, Stone, etc. Coal is an important source of energy which is directly used by consumers as a cooking medium or through its use electricity is produced which has multipotential utility. Gold of course, is a precious metal and commands international recognition. It brings drastic changes in the economy of a country. Sometimes it is called 'Yellow Metal' because of its yellow shining. Diamonds, traditionally, are of great value and therefore, are a sign of wealth and status followed by gold which is used for ornaments. Iron is invaluable for industries of any kind; lime stone for cement industry; mica is a good conductor of electricity. All these natural resources are explored from the stomach of the Earth. Since, all these sources are of indescribable value to man, they are the treasure troves for the development of a country and consequently of human beings.

All these resources being of value of such magnitude have to be explored very carefully with untiring efforts and labour. All put together, the industry is called mining industry which offers a great potential of employment of a variety of nature and level.

The total employment engaged in mining industry by the end of December 1982 stood to the tune of 780,000 almost catching up with the total number of employees in banking industry. Mining, therefore, offers what can be termed as excellent career opportunities in the years to come. The Planning Commission of Government of India, in their 7th Five Year Plan Document has made projections for the plan period of 1985-1990. As per the rough estimates, production of Coal will be stepped up by 2.8 times; that of Iron ore by 3.1 times; Copper ore by 3.9 times. Likewise there is a

programme of increased production of all the natural resources. Even if we assume a uniform rate of 3 times that could be achieved by 1990, the end of the 7th Five Year Plan, there will be increase in the demand of man-power for mining industry, if not correspondingly, but at least twice the manpower that was in existence prior to the beginning of the 7th Plan. However, latest figure of manpower already engaged in mining industry is that of 1982. Further, assuming that there was no increase in this manpower just before the 7th Plan, by 1990, because of stepped up estimates, there would be equal number of people that would be required to achieve the target after allowing marginal discount because of infrastructure already available. This gives rough estimates of the career opportunities for young people to enter into this field with prepared career plans.

Training—The premier institute which offers training courses of a variety and level in India is Indian School of Mines, Dhanbad, in the State of Bihar. This Institute, started in 1926 is a University by itself under the University Grants Commission Act since 1967. Since its inception this Institute catered to the needs of mining industry and over the years has grown into its years. The importance of this industry can be gauged from the fact that out of 4000 mining engineers that have been produced in India, 58 per cent of them belong to this Institute. Naturally, therefore, this Institute has a reputation and a majority of young aspirants of mining careers has a craze for admission into this Institute. However, because of infrastructural facilities and for maintaining high level standards, there are certain restrictions in giving admissions. This obviously necessitates opening of other Institutes for imparting training in mining technology.

Another institution enjoying equal reputation is the College of Mining and Metallurgy, Varanasi; initially it was a department in the Banaras Hindu University started even earlier to Indian School of Mines, Dhanbad, in 1923 but was converted into its present status in 1944.

Other Institutes which offer degree courses in Mining are: Indian Institute of Mining, Kharagpur (an exclusive department for mining); Bengal College of Engineering, Calcutta; Osmania University, Kathgudam; MBM Engineering College, Jodhpur; College of Engineering and Technology, Raipur, MP; Bihar Institute of Technology, Sindri, Bihar; Regional Engineering, College, Rourkela, Orissa; Visveswarayya Regional College of Engineering, Nagpur, Maharashtra.

The intake capacity of all these institutions is 350 for courses at graduation level. All these passed out professionals in Mining hold high level posts in various mining fields. Their earnings are better.

Apart from these highly trained professionals for high level management positions there is a need of middle management

personnel which is met through imparting training at diploma level. Such diploma level institutions have been located at Asansol in West Bengal; Kodamma, Dhanbad and Bhoga in Bihar; Gudur and Kothagudam in Andhra Pradesh; Kolar in Karnataka; Udaipur in Rajasthan; Nagpur and Ratnagiri in Maharashtra and Panaji in Goa. Apart from these institutions which offer instructions to day scholars, there are other institutions which conduct evening classes. These are the institutes at Jharia and Sijua in Bihar and Raniganj and Sitarampur in West Bengal.

Employment—The natural resources indicated earlier just give a mere glimpse of such resources. There are other resources whose number exceeds even 50. However, aspirants should collect more and more information about these resources and producers thereof. Here is given a list of some of the important producers of natural resources:

- (1) Coal India Ltd. and its subsidiaries like:
 - (a) Eastern Coalfields Ltd.,
 - (b) Bharat Coking Coal Co. Ltd.,
 - (c) Western Coalfields Ltd.,
 - (d) Central Coalfields Ltd.,
 - (e) North Eastern Coalfields Ltd.,
 - (2) Singareni Collieries Co. Ltd.,
 - (3) Tata Iron and Steel Co. Ltd.,
 - (4) Indian Iron and Steel Co. Ltd.,
 - (5) Damodar Valley Corporation,
 - (6) Neyveli Lignite Corporation,
 - (7) Hindustan Zinc Ltd.,
 - (8) Hindustan Copper Ltd.,
 - (9) National Aluminium Co.,
 - (10) National Mineral Development Corporation,
 - (11) Steel Authority of India Ltd.,
 - (12) Gujarat Mineral Development Corporation,
 - (13) U.P. State Mineral Development Corporation,
 - (14) Tamil Nadu Minerals Ltd.,
 - (15) Kolar Gold Fields Ltd.,
- and many more others in the public as well as private sectors.

Of the 8 lakh odd employees that are going to bring these resources from underground, the requirements of mining technologists with statutory qualifications can be roughly estimated by the stipulation incorporated in the mining regulations depending upon the size of the individual mining operations. The stipulation provides for one first class mines manager's certificate holder in

mining operations of a particular establishment employing 150 or more working underground or 400 or more in the whole of the mining establishment. For establishment employing less than 150 but more than 75 for underground workers or exceeds 150 but falls short of 400 as a whole, one Manager possessing second class certificate has to be appointed. Services of Under Manager or Assistant Manager are provided to the Chief Manager if the employees working underground exceeds 450 but is less than 1200 as a whole at the rate of one Assistant Manager for every 600 people working underground or 1600 employees as a whole. In addition one Additional Manager of the same qualification is provided where 300 additional workers are deployed for underground operation or 800 additional employees.

From the indices of requirements of managers shown above, we may perhaps, work out a figure of possible strength of managers in the whole of the industry.

On the strength of employees by 1982 *i.e.* 780,000, the managers in the industry till then could have been near about 5200. This will be doubled during the 7th Plan period throwing good opportunities to become a Manager. Correspondingly there will be an increase in the Supervisory and middle management staff. Therefore, it can safely be assumed that good prospects of employment in the mining industry lie ahead for the young people.

In addition to the professional qualifications *i.e.* degree/diploma in mining, competency certificates are awarded by the Directorate General of Mines Safety (Ministry of Labour) located at Dhanbad. This Directorate conducts competency examinations of first and second class competency which make them competent to hold senior managerial and supervisory positions with reference to safety requirements which are to be met on extremely stringent basis. These certificates qualify candidates for surface as well as underground operations and are also applicable to mine establishments irrespective of their product. During the course all such candidates are offered technical education and practical training. The courses run are of different nature and duration.

The Planning Commission has made projections of the mining industry piercing through the 20th century to 21st century. This projection throws abundant employment opportunities. For example, lime stone production would be stepped up to 130 million tons for target production of cement of 87 million tons as against 47 million tons of lime stone for producing 30 million tons of cement by 2000 AD. *Garnite* is another mineral which is poised for a big leap forward in its mining activities as it is expected to earn sizeable foreign exchange by exporting it by the turn of century. This gives ample time to get prepared for mining profession with good prospects ahead.

In addition to the employment opportunities in mining bodies there are other organizations which provide employment opportunities to mining engineers. Indian Bureau of Mines (Ministry of Steel and Mines) primarily looks after conservation of minerals and scientific exploitation of mineral deposits. Selection for higher posts in this organization is done through Union Public Service Commission. Central Mining Research Station (under Council of Scientific and Industrial Research, Dhanbad); Mineral Exploration Corporation are other organizations which offer employment opportunities for mining professionals. Recruitment in the mining establishments is done through advertisements and Employment Exchanges. Following are some of the positions in the mining industry.

Additional Superintendent of Mines/Deputy Superintendent of Mines; Assistant Superintendent; Foreman (Mining); Mining mate; Blaster/ Shot Firer; Survey Attendant; Overman; Sirdar depending upon the individual establishment and the product.

The profession of mining is essentially a field work away from city or village life. It is a rigorous and hazardous job. Digging is to be done deep underground with a fight against natural calamities. Utmost safety has to be observed. In spite of the fact that it is very exerting a job it is an adventurous and thrilling experience. Hence, this industry not only offers a rewarding career but it has its own exhilarating sphere too. As a Mining Technologist, he has to consistently fight against the forces, against nature deep underground. It becomes unsafe because of land caving in, inundation, methane and coal dust explosion and host of other calamities. However, the challenging job environment proves to be catalytic to a mining worker and makes him doubly inspired to forge ahead of the different situations. Even a little achievement brings him a sense of pride for his significant role in the efforts of building nation which needs all sorts of material for its development and progress.

With an unbound stress laid on science and technology prompted by the exhortation of our Prime Minister to bring India in the forefront of world's nations and develop our own first rate technology--second to none the country is ready for a major exploitation of all kinds of minerals which hold the key to economic strength and industrial prosperity. Contribution of mining professionals in this gigantic task, though little—but it is there and places them on high pedestal so far as scientific advances are concerned. That way these professionals earn accolade of the country's citizens. Young people should see that they prepare themselves for accepting these rewarding careers well in advance.

CHAPTER 51

CAREERS IN SOCIAL DEFENCE

The renowned film maker, Octagerian and the doyan of Indian Film Industry respected V. Shantaram earned accolade of millions of people—inland and overseas for his films mostly on social problems: one such being 'Do Ankhen Barah Hath'—a theme unusually different from the routine films. The film is based on a true story that took place in one of the erstwhile Indian states. Six hardened criminals undergoing punishment in a prison were handed over to a jail officer on his volition to reform them outside the premises of the jail, without taking recourse to a whip to look after them. It was for all purposes a free atmosphere allowing the criminals to enjoy everything they wanted except fleeing from the place. The jailor, put on trial for his novel experiment, thought and used all remedial and correctional methods within his capacity to reform the criminals. In the process, against heavy odds, he exercised such an influence on those criminals that ultimately, not that they were not only reformed but also stood against the doings of criminals.

It must be remembered that the jailor was not armed with any kind of rules and regulations or was wielding any weapon to make use of in crisis. The only weapon that he could make use of was his self-confidence in human values. His success in winning over the criminals becomes a guide post for future workers who want to reform criminals without using a stick. A new occupation has been added to the fold of social workers.

Reforming criminals is one out of many functions a social worker has to undertake. In fact, all social workers work on the premise that why should there be situations to take place to reform criminals. In other words, there should not be any occasion to allow man to turn a criminal. Three important words are found in the dictionary of social workers; they are: prevention, correction and reformation each of immense value for social advancement.

Man takes to crime not as a pastime, hobby, joke, entertainment but because of certain compulsions. Again criminality is not the only area to which man takes recourse to. There are other areas that could be chosen by some individuals as means of their survival or say expressing their curbed powerful impulses and

thoughts. In short, these areas may be offences like, theft, pick-pocketing, robbery, dacoity, murder, immoral trafficking, beggary, addiction to alcohol or drugs, all of which do not receive any social sanction because they create disturbance in the society which otherwise is peace-loving. As said earlier, people embrace or get involved in these vices out of duress perhaps against their will, but once they are in, they just cannot manage to get out of the murky and precarious situations created in the underworld activities and hence, they get alienated from the mainstream of the society bearing a stamp of 'anti-social elements'.

It is the duty of the remaining sane world to arrange for reentry of these waylaid people back into the society and allow them to enjoy the bliss of life. The work of the nature has been entrusted to people who are called social workers, who, perhaps, are required to accept the toughest job, a career, compared to other careers.

There are several areas which need services of social workers. There may be Labour Welfare and Industrial relations, Medical and Psychiatric Social Work, Family and Child Welfare, Urban Community organization and Development, Tribal Welfare, Services for Emergency Relief and Rehabilitation, Social Research in which various kinds of social workers work. We have already gained knowledge about them in one of the chapters of the book. The careers in this chapter are limited to a field of social defence—correctional administration (Criminology and Juvenile Delinquency, Probation and Aftercare, Social Research). This section of workers has an additional responsibility of shaping the structure of the society through preventive measures, correct the wrong behaviour and reform the people who have adopted a course of living socially unacceptable, they are to defend the members of the society from maladjustment which invariably leads to serious consequences and disturbs the social fabric and peace. This section of workers puts a fight against vices that crept into the society and save it from dire consequences whereof they are called defenders of society.

The areas of maladjustment may be quoted as Juvenile Delinquency, its prevention and control; Prison Administration and Reform; Community Based Programmes for the treatment of defenders; Suppression of Immoral Traffic, begging Control and Prevention of Social Problems like Alcoholism and Drug Abuse; each of these problems is sufficient to create tension among members of society amounting to a stigma on it or humanity as such. The workers in the Social Defence field have, therefore, a dual role to play; to save society from impending dangers and bring on right path those who were waylaid from society to maintain its integrity.

Boys and girls uncared for by parents and society develop detest against them and consciously or otherwise determine to take revenge for the precarious state they were forcibly thrown in. Discarded by everybody they take to crimes initially of minor

intensity, gradually rising to new heights in them. The time that they could have been normally in schools and colleges is spent in anti-social activities and consequently passed in burrows, ravines or such other hideouts to keep police off the trail. Through massive efforts, these vulnerable young people are to be guarded from taking such extreme steps. So, the first principle is that of prevention of criminal tendency among the young. However, whatever may be measures and precautions that could be employed for prevention of criminal tendencies, there could not be a hundred percent success. Some intent with grief and emotion will turn to be criminals. The process to correct their behaviour is the second principle and third being reforming them in attitude.

Miscreants, criminals and others of the like are put into jails after the charge is proved to undergo the awarded punishment. There is a room now to offer such facilities to prisoners which will make them realize their follies and will create a sense of responsibility into their minds. The example quoted at the beginning of the chapter is the result of this thought.

Young and immature girls are hired and enticed through false promises and end into the vice of prostitution. Prevention is the best course rather than cure in such cases.

Children fled from their houses, urchins and others take to begging since there being no alternative or some people run an organization in which these boys/girls are used. These children are to be saved from this curse of begging.

Because of frustration, tension, joy, experiment, or just for fun's sake people take to drinks or drugs, slowly form a habit and end in getting addicted to them, so such so that they cannot live unless they take drinks or consume drugs. These people are to be corrected physically and mentally.

Training—Though social defence services are not new, yet they are of recent origin and much has to be achieved in this regard. The old view that criminals should be treated sternly by offering equal punishment commensurate to the intensity of the crime is thought to be a barbaric one and indicative of a cruel society. A constant research has shown that because of negligence of society its members turn anti-social and hence it is imperative on the part of the society to give opportunity to the criminals to reform. This cult has to be inculcated in some people who wish to do something for prevention of crimes and bringing reforms into criminals. Systematic training courses are being organized by the institutions. The institutions and courses in social work they offer are given in a separate table. The degree/diploma/certificate holders in social work are eligible to take up this onerous task.

However, each of the fields requires special training, methodology and measures to tackle the problems. Short-term and ad hoc courses in separate fields are organized by the National Institute

of Social Defence, Delhi for those already professionally trained and doing work in respective fields. The functions of this institute are based on the premise that crime prevention cannot be treated merely as a policing activity. The problem of criminology has to be understood and tackled in relation to social structure, society development. It plans, coordinates and develops social defence programmes; conducts research and training programmes as means to improve the quality of services and serves as a catalyst for voluntary action for crime prevention.

Employment—The trained personnel in the field hold positions as Medical Social Workers, Community Organizers, Welfare Workers, Care Workers, Investigators. The courses run by the institutes mentioned in the appendix (these are in Maharashtra only. Similar courses might be available in other states also), are job oriented. They are employed in community centres; institutions for adults and children like prisons, probation and after-care institutions, borstal schools, reformatories, beggars' homes etc., hospitals, psychiatric clinics, correctional institutions, family welfare agencies, handicapped institutions and social welfare departments. There are private and charitable institutions/trusts which offer employment opportunities to these people.

Some of the jobs have been described below:

(1) **Medical Social Worker**—He assists in solving social and emotional problems of individuals in relation to illness; assists in giving medical treatment, discusses with physicians patients' social problems; visits homes of patients in developing mental and emotional adjustments, attempts to eliminate fears, prejudices and such other obstacles; facilitates effectiveness of treatment by assisting patients to regulate their lives so that harmful factors such as over-work, strenuous recreational activities, inadequate diet and worries are removed.

(2) **Child Welfare Organizer**—He develops programme contents, organises and leads activities planned to aid parents with child rearing problems and children with difficulties in social adjustments, visits homes in slum areas and crowded quarters to investigate home conditions to protect children from harmful environment and disseminates information on health care; helps parents through individual or group conferences to understand/accept and follow medical recommendations on child welfare and hygiene, organises children's play centres, day-care-service; places children in foster homes, institutions, medical treatment centres and provides counselling to children and parents in social adjustments.

(3) **Probation/Aftercare Officer**—He studies and investigates problems of ex-convicts and suggests and undertakes suitable measures towards their rehabilitation as useful citizens; studies background and environments of offenders to ascertain causes of

delinquency and maladjustment and reports to courts to determine their probation period and corrective measures to be taken.

There are other workers such as Women's Welfare, Family Planning Organizer, Village Level Workers, Criminologists, Penologists. etc.

All of these workers have a common end in view *i.e.* social service that is used to bring back to normalcy and social responsiveness the vulnerable section of the society like juveniles, women, adolescent and adult offenders prone to drug abuse and offences of social, moral and economic nature. Satisfaction accrued through these services is par excellence.

APPENDIX

Training Courses Available in Social Work and the Institutions Offering Them

<i>Sl. No.</i>	<i>Institution</i>	<i>Course</i>	<i>Specialization</i>	<i>Admission Qualification</i>	<i>Duration</i>	<i>Age</i>	<i>Mode of Admission</i>
1.	The Tata Institute of Social Sciences, Sion—Trambay Road, Deonar, Bombay-400088	M.A.	Criminology, Correctional Administration, Family and Child Welfare, Medical and Psychiatric Social Work, Social Welfare Administration, Urban and Rural Community Development	Graduate	2 Years	20	Essay Test, Group discussion, Aptitude Test, Interview.
		P.G.	Research Methodology	Graduate	1 semester	20	"
		Certificate M. Phil	Social Work, Social Sciences	Post-Graduate with 55%	1 Year	20	"
		Ph. D.	Social Work, Social Sciences (Sociology, Psychology, Economics, Criminology)	"	Time taken for research	20	"

Sl. No.	Institution	Course	Specialization	Admission Qualification	Duration	Age	Mode of Admission
2.	Institute of Social Service, Nurmala Niketan, 38, New Marine Lines, Bombay-400020	M.S.W.	Social Work	B.A./ B.Sc./ B. Com	2 Years	Nil	Written exercise, Personality Test
3.	School of Social Work for Women, Matriseva Sangha, North Ambazari, Nagpur-440010	B.S.W. Certificate Certificate	Social Work Social Work Social Work	XII XII X	3 Years 1 Years 1 Year	Nil — Nil	" " Entrance Test
4.	Karve Institute of Social Service, Hillside, Karve Nagar, Pune 411029	B.S.W. M.S.W.	Social Work Social Work	XII Graduate	3 Years 2 Years	" 20 to 40	" Written Test, Group Interview

CHAPTER 52

CAREERS IN INSURANCE

Man has many enemies—both internal and external. Internal enemies form a beeline of diseases—curable and incurable. External enemies are unpredictable events covering accidents. As a consequence, death's icy hand hangs all the time on him. Though immortality is not guaranteed, nay! it is not possible at all, there is no certainty as to a specific time of death. Some may die at a very mature age, someone's life is cut abruptly without rhyme or reason. Sudden death leaves remaining members of a family in indigent and precarious conditions. This compels man to think of some safeguards which can come to his rescue.

Various forms of small savings have been designed to protect interests of members of family. All such forms indeed are of utmost utility in case death occurs. However, these savings are limited to the money saved plus interest accrued on it. This amount does not meet varied needs of family since there is a sudden break in income of family. This invariably makes man think of such a scheme which can give sizeable help in case unfortunately sudden death takes place.

That is the scheme of life insurance and its organization is called Life Insurance Corporation. It is necessary to know about this organization and its importance as it protects people in dire circumstances, finances governments in their developmental programmes and offers very many employment opportunities for young qualified people with bright prospects.

Life is a precious thing but very elusive and deceptive, cannot be guaranteed. What is the cost of life? Apparently, no cost can be worked out precisely in monetary terms. Also it depends upon position and status. In a family where there is a single earning member, he is simply priceless as other members are dependent on him for their survival. Death under these circumstances brings a tragedy in that family. In a family otherwise in a happy situation, death of a person may not be that painful, however, it affects in certain other ways. In all, death—that too sudden leaves behind its after-effects. In common man's family such an occurrence is

unbearable. Hence, wiseman's action or say first preference should be insuring himself under one scheme or the other offered by Life Insurance Corporation.

There are various policies under which man is insured to the extent he insures himself. Multipurpose policy, Endowment policy, Education policy are some of its forms. A notable and interesting part of Life Insurance is that members of a family get full insured money with bonus accrued on if immediately after death takes place. A person may insure for a specific amount of money commensurate to his investing capacity for a specific period of time. In a case where death occurs, family members of dead man get all the insured sum together with bonus. Say, for example, a certain man insures himself for a sum of money of Rs. 25,000 for a period of 20 years at a rate of Rs. 110/- as a premium per month. Unfortunately if death occurs after paying premia continuously for three years, members of dead man's family stand to get the whole amount of Rs. 25,000/- plus bonus accrued on it irrespective of the fact that he had just paid Rs. 3960/-. This amount draws family members out of their precarious conditions. In case, death occurs in an accident, members of a family get double the insured amount again with the benefit of bonus, however at a slightly more rate of premia. That is the greatest advantage. We cannot control life but definitely can plan for it. In cases of emergency insured person can obtain loan on his policy to meet the instant need. Such being the case Life Insurance Corporation is an uncrowned member of each family.

Insured person feels at comfort because he is relieved of his worries and tension. In a way he transfers his worries to the Life Insurance Corporation when he insures. It may be a conceptual idea or a figment of imagination to say that insured person's life span is increased because he is rid of his worries and tension which are killers among others. All advantages put together Life Insurance Corporation becomes a saviour of people, say a good samaritan.

Life Insurance Corporation is a business and service organisation. It is because it sells its policies to customers, and serves them in solving their problems. It carries its business through its network of more than 700 branches spread throughout the country functioning under 41 divisional offices, 5 zonal offices and one central office. In all these offices employees serve people and the country in four capacities as grade I, II, III and IV posts. Over years this corporation has done a good business and rendered an invaluable service to the people and the country. To create awareness among people about their life and its security was the work that has been done by it. Now people have understood the importance of insurance their life and are coming forward in good number to avail of the services of the corporation. It has reached now to every corner of the country.

Life is precious yet uncertain, cannot be guaranteed. Other members of the family are dependent on a person who is an earning

member. If anything untoward thing happens all these members are pushed into indigenous circumstances. If the person has insured, the financial support that his members of the family get indeed becomes such a help that they are not forced to look at others for help and support. People who work in the organization perform a great service to the people.

Training—This organization employs a number of trained as well as untrained persons. There are no special institutions for training personnel in insurance industry. All these persons are drawn from other fields. For example, this organization requires managers who have already been trained for managerial positions or organization and management functions. Candidates should look for such jobs under the chapter careers in Professional Management. For other types of workers except Development Officers and Insurance Inspectors, it is not necessary to have professional and technical training because all these posts just require graduation or even secondary school certificate examination pass to discharge their functions mostly related to clerical occupations. The few occupations which are peculiar to the organization have been described below alongwith recruitment made thereof.

Recruitment

(1) *Assistant Administrative Officer, Grade I*—Graduates or post-graduates of any discipline having secured 50% marks in the respective examination and are within the age group of 21 to 28 are eligible, for consideration against the post of Assistant Administrative Officer (Grade I). Expectant candidates have to appear for All-India competitive examination conducted by the Directorate of Personnel Selection, Life Insurance, Yog Kshema, Bombay. This examination is held at 31 centres in the country. The examination is followed by an interview. Those who fare adequately well to the extent of vacancies are available are selected for these positions.

The examination comprises intelligence test, knowledge of English language (Grammar and words), General Knowledge, Current Affairs, capacity to do statistical work, precis writing. Successful candidates are further trained in the Corporation's Officers' Training College for full one year during which all trainees receive stipend. On successfully completing the training they are placed in appropriate grade with good perks. All trainees will have to execute a bond to serve the corporation for three years before they are given appointments.

In addition to the regular Assistant Administrative Officers there are special Assistant Administrative Officers required in the corporation's financial and legal departments. Candidates holding qualifications like post-graduation in Commerce or Economics with 58% marks or post-graduation in Business Management having specialization in finance or Chartered Accountancy with at least three years' experience are eligible for posts of Financial Analysts in

the Corporation. For administrative posts in legal department of the Corporation candidates holding first class degree or second class post-graduate degree in law are eligible. They should have specialization in company law, commercial law. A competitive examination is held to recruit these officers by the Corporation as and when required. Candidates have to take the examination at their own cost, however, those who have been called for personal interview are paid second class fare to and fro by the corporation. During the period of training of one year they have been trained in theory and practice. All other conditions remain the same as are applicable to General Assistant Administrative Officers.

(2) *Development Officer—Grade II.* The Organization and Development of the Corporation depends on a larger scale on Development Officers of Grade II status. All the business of the corporation is done by these officers. These officers enjoy much freedom and independence so as to earn a good deal of business. They have to make selection of insurance agents through whom they increase their business. It is indeed this limit that is responsible for the Corporation's existence. To be eligible for the position of Development Officer, a candidate has to be a graduate in Arts, Science, Commerce, Agriculture, Law etc. and should have to be in the age-groups of 21-26. Recruitment is made through a written test and interview. Those selected for the post of Development Officer, have to serve the corporation for continuously 10 years during which period they are just paid a stipend. Initially they are inducted as Probationary Development Officers. After clearing of the Probationary Period they are promoted to the post of Development Officer in an attractive grade. They get vehicle allowance and incentive bonus for the good work they perform. The entire selection process is done by the Divisional Office of the Corporation.

(3) *Other Posts*—From time to time Divisional and Zonal Offices of the Corporation recruit persons for the posts of Assistant, Stenographer, Typist, Telephone Operator, Punch-Card Operator, Adreme Machine Operator etc. For stenographer's post candidates should have passed 10+2 with 55% marks or should have to be a graduate/post-graduate and possess requisite speed in stenography and typing. For posts of typist they have to have 40 words per minute speed in English typing or 25 words per minute speed in Hindi typing. They should have also secured 55 per cent marks in the 10+2 examination. This is also required for the remaining posts too. The age-limit for all the posts is 18 to 30 years of age. Occasionally appointments to the posts of Architectural Assistants, Assistant Engineers (Public Health) are made.

All these posts are advertised in the leading newspapers and recruitment made. Clerical vacancies are filled in through the local employment exchanges.

(4) *Self-Employment*—Occupational opportunities in the Life Insurance Corporation are more in self-employment than what are

in the paid employment. These are through taking an agency of the corporation. A person who has passed SSC can become an agent. He has to give life policies of at least 12 persons valuing of at least Rs. 1 lakh in a single year in an urban area. The limit of business in rural area is of Rs. 60 thousand only. All these agents get commission on the quantum of business done by them as follows:

- First year: 25 per cent of the premia
- Second and third year: 7½ per cent of the premia
- Later for the period of the policy: 5 per cent

Agents are not the regular employees of the Corporation and hence, they enjoy their freedom to do the business. Since their earnings depend upon the percentage of the business, they labour very hard to increase their business. More the increase in the business, more they earn.

The Corporation selects candidates who are within the age group of 22-30. They are intensively trained for three years to make them adept in doing the business. They are paid a stipend during the training period. Simultaneous to training, these candidates have to establish wide contacts and do the business. With application and devotion such agents can complete the targets allotted to them. It has been noticed that an ordinary agent can earn more than a thousand rupees by way of commission. All these agents are called career agents and work in urban areas.

Under the Rural Career Agents Scheme, candidate should be between 21-35 years of age. They are trained for two years and are paid a stipend. Qualification is just high-school pass. This scheme is applicable where population of a village is 2000 to 5000.

The total employment in the Life Insurance Corporation by March 1983 was 60,000 excluding career agents. There are nearly about 43 thousand employment in other type of insurance called non-life insurance. This organization includes many companies involved in insuring various items such as buildings, vehicles, godowns and such other things against fire and damage. Other information is more or less like Life Insurance Organization. Candidates are advised to collect information in depth before they choose any career in Life and Non-Life Insurance business.

CHAPTER 53

CAREERS IN FORESTRY

In the quite early stages of mankind forests have played a dominant and useful role. In fact, they imparted pedagoging instructions to the early man. Man learnt the importance of fire when he saw it in the forests, caused by friction of two branches of a tree. He himself then tried to produce fire by the same principle. In the wild fire many animals got burnt. He tasted the flesh of such animals and liked it. He began to cook his food on fire. He collected his eatables from the thick forests. He used barks of trees to preserve his decorum. He protected himself from wild animals by seeking shelter in caves provided by the forests. In fact, forests were each and everything for this man, because forests provided the three basic needs of man. They served as a spring board for man to jump to his present modern life, of course, the stages of his evolution.

In the context of modern life, forests have not lost their utility to man even though man does not now depend on the forests to quench his basic needs which he tries to satiate from other means invented by him. He knows now that forests bring rains and therefore he engages himself in afforestation wherever he finds place. He collects timber and fuel from the forests to construct his dwelling units and cooks food. He knows utility of wild animals and protects them from their extinction; collects so many other things like gum, honey, industrial wood, tea, rubber, coffee and many other forest resources.

Knowing the importance of forests, our country has laid down the National Forest Policy in 1952 which stipulated that the country should aim at a coverage of one-third of the total geographical area under forests of which 60 per cent should be in hilly tracks and 20 per cent in the plains. However, as per the report of the National Remote Sensing Agencies of 1982 the forest coverage came down. It further points out that on an average 1.5 million hectares of forest cover has been lost annually. This is a colossal loss to the country.

In 1980 Forest (Conservation) Act was enacted with an objective of checking diversion of forest land for non-forestry purposes. Another objective was conservation of existing forests

and launching of a countrywide afforestation and social forestry programmes keeping in view the needs relating to (1) ecological security, (2) fuel, fodder and other domestic needs of the population, (3) the needs of village, small scale and large-scale forest based industries. Under the scheme of social forestry including Rural Fuelwood Plantations has to be undertaken on a massive scale.

As regards production forestry programme emphasis has been laid on plantation of commercially important species like teak and bamboo.

Forestry has acquired a multi-disciplinary dimension and to achieve a thrust into it Indian Institut. of Forest Management has been established in March 1981 at Bhopal. The Institute will have a wide range of activities covering research, development of teaching material, executive development programmes and consultancy/management needs in terms of community social forestry and farm forestry.

The Forest Research Institute, Dehra Dun is a nodal agency for forest research and education in the country. On the recommendation of the National Commission the Agriculture Forest Survey of India was created in June 1981 having activities as forest inventory and re-inventory, photo interpretation and mapping, data processing and training, consultancy and some special studies.

In regard to wildlife, there are 53 National Parks and 223 sanctuaries constituted under the Wild Life (Protection) Act, 1972. The Project Tiger has been hailed as one of the conservation successes in increased tiger population, preserving floral and faunal categories from their extinction which caused eco-systems imbalance. Wildlife Institute was formed in May 1982 in order to meet the needs of trained manpower and research backing for vast conservation areas of the country. This institute conducts a one year diploma course and two-year post graduate degree course in Wildlife Biology and Management. It also offers refresher courses as well as specialised courses for officers of the wildlife organization and Forest Departments.

The role and importance of forests in protecting eco-system and supply of various products has been well recognised. The goal of preservation of forests is reflected in the creation of a separate Department of Forests and Wildlife at the Central Government. The strategy to achieve the objective of forest conservation and development embodies the following components:

- (i) Conservation of ecologically fragile eco-system, preservation of biological diversity of fauna and flora;
- (ii) Increasing vegetation cover by massive afforestation through Social Forestry, Farm Forestry and Plantation programme,

(iii) Meeting basic needs of people in regard to fuelwood, fodder, minor forest products and timber;

(iv) Ensuring close linkages between Forest Programmes and Welfare of Tribal and other communities traditionally dependent upon forests;

(v) Special emphasis on forest research, education, training and extension;

(vi) Implementing National Wildlife Action Plan for wildlife conservation; and

(vii) Creating a massive people's movement for achieving the above objectives

In addition to the institutions mentioned above one more institution of vital importance, namely, National Waste Land Development Board has also been established primarily to save several hectares of land from degradation and several hectares of other land not being put to any productive use. This Board formulates a national policy, perspective plans and programmes for the management and development of waste land through a massive programme of afforestation and tree planting. The Indian Council of Forestry Research and Education in its new shape gives an umbrella coverage for co-ordination and co-operation with activities of State Government agencies, universities, industries, ICAR, CSIR and other institutions

Employment—Forestry is a part of Agricultural Sector which includes hunting and fishing also. The total employment under the overall sector for 1982 was 1306000 both in the private as well as public sector. Compared to the figures of employment for the year 1978 which was 1228000, there is a net increase in employment by 78000 over the period of five years. A sizeable chunk of this figure must relate to forestry thus creating job opportunities for expectant candidates for forestry careers. The employment should increase by 1990 because of stress laid on forestry policy, however, such an increase cannot be estimated in absolute numbers.

The employment opportunities are Chief Conservator of Forests, Conservator, Dy. Conservator, Assistant Conservator, Divisional Forest Officer, etc. All of them are engaged in maintenance, management, protection of trees, wood, flora and fauna

Personal Qualities—The life of forest personnel is away from the city or even village life and also involves rugged life. To bear all the strain of this profession a person should possess good physique, intelligence, self-reliance, courage and tact. He should be able to walk long distances in jungles, more often all alone to survey the conditions of trees, animals and birds. He should also be capable of doing hard and strenuous work, pass his days in camp-life isolatedly where normal food and modern comforts are lacking. Alongwith he should have to undertake riding on horse,

elephant, mule, etc., and should know handling of weapons such as gun, revolver, etc. Since life in the jungle is life with dangers of snakes, wild animals or even poisonous trees he must possess a sense of quick decisions and judgment, over and above he must have a genuine aptitude and interest in plants, animals and birds.

Recruitment—Recruitment to various posts in the Forest Department is made through two methods.

(1) All India Competitive Examination called Indian Forest Service Examination. This is conducted by the Union Public Service Commission, New Delhi for the top-most posts.

(2) Forest Departments function under the State Governments. These State Governments recruit middle order forest personnel through their respective state Public Service Commissions. Details of each are provided below.

I Indian Forest Service Examination

This Competitive examination is conducted by the Union Public Service Commission, New Delhi every year generally in the month of July-August. An advertisement appears in the Employment News and other leading national dailies inviting applications for the purpose.

Qualification—Desirable candidates should possess a bachelor's degree or pass in the subjects of Botany, Chemistry, Geology, Mathematics, Physics and Zoology or a degree in Agriculture or in Civil, Mechanical, Agricultural or Chemical Engineering of any Indian University or institute—deemed as a university under an Act of Parliament. A candidate should be within the age limit of 20-24 years at the date of the Year of examination. They are trained at Forest College or Forest Training School for two years for a diploma.

The centres of the examination are at important cities of the country mostly state capitals and are being included in the category of reserved.

Method of Selection—A written examination is held in the following subjects:

(i) **Compulsory Subjects**—(1) General English, (2) General Knowledge.

(ii) **Optional Subjects**—Any two of the following subjects: Agriculture, Agricultural Engineering, Botany, Chemical Engineering, Chemistry, Civil Engineering, Forest Management, Geology, Mathematics, Mechanical Engineering, Physics, Silviculture and Zoology.

Advertisement normally appears in the month of Feb. of the recruitment year and candidates have to send their applications in the prescribed form obtain from the commission's office.

Those who qualify the examination are called for personality test and physical test. Final selection rests on a number of vacancies that are to be filled in. Candidates topping the selection list are appointed in junior scale from which they rise in status successively depending upon the availability of posts. All these officers are group 'A' gazetted officers and are paid the salaries as per the Central Govt. Scales applicable uniformly to such posts in other Central Government departments. Physical standards are the same as applicable to Forest Rangers' course.

II. Forest Rangers Competitive Examination

This examination is held by the respective State Public Service Commissions as per seats allotted to them in four of the Forest Ranger's Colleges located at the following places:

- (1) Northern Forest Rangers College, Dehra Dun.
- (2) Southern Forest Rangers College, Coimbatore.
- (3) Eastern Forest Rangers College, Kurseong.
- (4) Central Forest Rangers College, Chandrapur.

Entrance Qualifications—Candidates must have passed B.Sc Examination in science for whom the course is of one year duration or Intermediate Science Examination for whom the course is of two years duration. All these candidates should have passed the said examinations in any two subjects, like Mathematics, Physics, Chemistry, Zoology or Botany.

The physical standards prescribed are, Height 163 cms, Chest Measurement: 79 cms before expanding and 84 cms after expanding. They should be mentally and physically sound. Selected candidates will be required to appear in a 16 mile walking test in 4 hours at their own expenses. Age limit prescribed in 18 to 30 years.

The examination includes the following subjects:

Section 'A' Compulsory Subjects—English Essay, General Knowledge, Elementary Mathematics and Hindi each carrying 100 marks.

Section 'B' Optional: Anyone of the following subjects—Physics, Chemistry, Zoology, Botany, Indian History, Economics each of 100 marks. All the papers will be of three hours' duration.

On successful completion of the course with a higher standard certificate, the candidates are appointed as Forest Rangers with prospects of promotion to the individual State's Forest Service Group II.

The Forest Ranger is an executive-in-charge of a forest range or area of forest and is required to deal with all matters regarding forests including marking, transport of timber and fuel wood to specified depots, sowing, planting and other silvicultural work, construction of roads and buildings, protection of forests, investigation of forest offences, etc.

Apart from the occupational opportunities mentioned above, there are certain other lower cadre posts such as forest guards which are filled in through the Employment Exchanges.

A relatively new innovation has been applied in improving the forest development programme through Remote Sensing Agency. Remote sensing through satellite imagery is a valuable aid to aerial photography and photo interpretation in forest resource survey leading to scientific forest management.

The Seventh Five Year Plan Document observes that Forestry Programmes, by and large, have so far been implemented in isolation and therefore, the concept of people's participation in forest development has never been conceptualised and operationalised in clear and comprehensive terms. Since people's participation in the forestry programme is vital for the progress of forests there is an urgent need for evolving a viable, effective and operational model. The association of people in the implementation of afforestation programmes would further result in the creation of awareness, exchange of views and better appreciation of the activities in the field. This is the new task that has been entrusted to the forest personnel.

CHAPTER 54

SCHOLARSHIPS

According to the mid term assessment of the Sixth Five Year Plan, undertaken by the Planning Commission in 1983 persons who are still below the poverty line form 41% by December 1982. This means that these people don't get enough food, clothing and shelter. The very fact that 41% people are below poverty line, leaves no doubt to form an opinion to say that if not more an equal percentage of people are just above the poverty line, prone to slide down anytime since there is no guarantee of their stationary income. The remaining 18% people fall within the middle and higher income groups. Though the plight of middle income group people cannot be said to be good because of depreciation in the value of the rupee, they have at least some means though meagre to support education of their children. At the same time running into debts or sometimes squeezing and accommodating themselves with the bare minimum needs of life. But the real and taxing problem is that of the hard core group hovering just above or below the poverty line for whom education appears to be a luxury a gleam to be viewed from a distance. Added to this indifference which does not create awareness among them about education and its benefits.

The Government of India and the respective State Governments have realised the situation and have taken steps to reduce the element of poverty progressively through well designed programmes of uplift. No Government including the present one can well afford to provide all the necessary help to the poor straight away over the poverty line within a span of 30-35 years after independence out of the state of acute shortage of economic resources. 'The India' that was handed over to indigenous leadership by the alien rulers was rickety because she was fleeced to the skin and her entire wealth was smoked off. Yet, the progress that has been achieved and that too without aid of others is remarkably astounding. Well At present that is not our problem to look at. The fact remains that people do not have enough resources to make use of for today and invest for the future—something like that of an economic dictum—you cannot eat the bread today and have it preserved for tomorrow.

To help the poor people become able to educate their children, Governments, as welfare states, have offered scholarships, concessions and facilities. Their efforts have also been supported

by some philanthropic associations. The knowledge of such scholarships becomes of utmost importance to the distressed families to seek higher education for their wards. This information is given below.

(1) National Talent Search Scholarships—This scholarship is offered on the basis of a competitive examination conducted by the National Council of Educational Research and Training. The main purpose of this scholarship is to provide financial assistance to students of rare talent to prosecute their higher studies after passing of the X class examination, to harness their talent and make them able to become experts in their chosen subjects so that they can contribute richly to the progress of the country.

Selection Process—Boys are tested in basic and social sciences. They are also tested of their general intelligence through a questionnaire containing problems on reasoning, analysis and synthesis.

Boys are tested on the basis of the educational standard of X class in Biology, Mathematics, Economics, History, Geography and Civics. Each boy will have to take the examination in any four of these subjects.

Boys are allowed to take this examination in any of the Indian languages recognised by the constitution in addition to English. Those who become successful in written examination are interviewed individually for final selection.

Eligibility—Students who are studying in X standard at present and had secured more than 55% marks in the previous examination i.e. IX class examination are eligible to take this examination.

A candidate can take this examination only once. If, at any time, the council observes that ineligible students are taking benefit of the scholarship, it will be stopped forthwith. Candidates are not required to pay any fees to appear for the examination.

How to apply—The prescribed application forms can be had free of cost from the following offices:

- (1) Head Master/Principal of the respective school.
- (2) Nearest Centre of the Examination.
- (3) Section Officer, National Talent Search Scholarship Examination Cell, NCERT, Shri Arobindo Marg, New Delhi-110016.

Personal requests for blank application form should accompany with an envelope of 12 cms x 30 cms dimensions bearing proper postal stamps. Completed application forms are to be submitted generally by the end of January each year.

These application forms are to be submitted to a supervisor of a Centre where candidates desire to take the examination. The supervisor of such a centre will issue admission cards to candidates.

The date of the examination will be sometimes in May in each year. The result of the examination is communicated to candidates by registered post.

Rates of the Scholarship— (There are 750 scholarships)

- (1) For 10 + 2 stage = Rs. 150/- p.m. + Rs. 200/- as book grant.
- (2) Upto Second degree Rs. 200/- p.m. + Rs. 300/- as book grant.

Continuation of the scholarship depends upon assessment of performance of candidates at each year's examination. These scholarships are available for first degree in India and for post graduation abroad. Rates of overseas scholarships depend upon the standard of living of that country. 70 Scholarships are reserved for members of Scheduled Caste/Tribe candidates

There are in all 440 Centres of the examination in India. Alongwith the application form, the prospectus of the examination is sent. This prospectus contains all relevant information. Students should study this prospectus thoroughly. Specimens of objective type of questions are given in this prospectus which helps candidate to know the manner of giving the examination.

(2) National Scholarship

Number of Scholarships—25000,- (Twenty five thousand)

This number depends upon availability of funds.

Duration—These scholarships are available after passing of High/Higher Secondary Examination upto first degree examination and after first degree upto post-graduation.

Rates of Scholarship—Depending upon educational level the rate in Rs. 60/- p.m. to Rs 170/- p.m.

Subject of Study—Any subject.

Qualifications—Candidates should secure more than 60% marks in the qualifying examination. In accordance with the number of scholarships allotted to a particular recognised examination, these scholarships are offered to boys who are included in the merit list prepared by the Secondary School Examination Board of each State and Union Territory.

Age—There is no age-limit to be eligible for this scholarship. But a candidate should be eligible to secure admission in regular course of the University. Date of submission of Applications: There is no need to apply separately for this scholarship. Students are automatically selected once the merit list is prepared by the Examination Board. Each candidate is given an Entitlement Card.

Other Conditions—Those listed at the top and whose parent's income does not exceed Rs. 6000/- p.m. are eligible to get these scholarships. Boys whose parents' income is more than this, even though they are included in the merit list do not get this scholarship. However, in recognition of their merit, they are given a citation (merit certificate) and a token grant of Rs. 100/-. But this scholarship will be available to such students for the courses after first graduation.

(3) National Scholarships for Boys of Primary & High School Teachers

Number of Scholarships—750 (seven hundred fifty). This number may be changed every year depending upon availability of funds.

Duration—The scholarship is available for any length of studies in India, but restricted to first degree in Engineering and Medicine.

Rate of Scholarship—Rs. 50/- p.m. to Rs. 125/- p.m.

Subject of Study—Any subject.

Age—The same as applicable to National Scholarships.

Eligibility—Boys of Pre-primary, Primary and High School teachers who secure 60 per cent or more marks in the High School Examination are eligible for this scholarship.

Other Conditions—These are as applicable to National Scholarships.

Date of Submission of Application—Selection of candidates is done on the basis of a number of marks secured by students in the qualifying examination. The State Education Directorate invites applications through advertisement in the newspapers and candidates have to apply in the prescribed form before the due date.

(4) Scholarships for Studies in Hindi after Secondary School Examination for Students from Non-Hindi Speaking Areas

Number of Scholarships—2500 (two thousand five hundred). This number may be changed depending upon the availability of funds.

Duration—This scholarship is available for completing one stage of education with a condition that candidates will have to study Hindi compulsorily.

Rate of the Scholarship:

Level of Education	Non-Hindi Speaking Area	Hindi Speaking Area
(1) Three Year Degree in the University.	Rs. 50/-	Rs. 80/-
(2) Two years of the three Year University Course.	Rs. 75/-	Rs. 105/-
(3) Post-graduation and Hindi Teachers' Training.	Rs. 100/-	Rs. 125/-

Such of the students reading in Non-Hindi speaking areas are given second class Railway fare to and fro.

Subject of Study—Students must offer Hindi as one of the subjects. Selection of students is made on the basis of a number of marks secured in each examination.

Date of Submission of Applications - The State Education Department invites applications through advertisement in the newspapers each year in the month of September in response to which candidates have to apply.

(5) National Loan Scholarships

This scholarship is offered by the Government of India for talented and deserving students to help them to prosecute higher studies. The scholarship is given every month. The loan so taken is to be refunded one year after the candidate starts regular earning or after three years of the stoppage of the Scholarship whichever is earlier. If the loan is refunded within the time-limit, no interest is charged. Those candidates in receipt of this scholarship accepting a profession of teaching or join Indian Defence Forces as Combatants get relief of one tenth of the original loan money for every completed year of service. This means that a candidate serving for 10 years continuously in either of the two fields gets total relief of the amount of loan.

Number of Scholarships—20000 (twenty thousand). The number of scholarships depends upon the availability of funds every year.

Duration—This scholarship is available for studies after secondary school examination till the candidate completes his education irrespective of level and type of education within India only.

Rates of Scholarship—Rates of the scholarship are dependent on the level and type of education. They are, Rs. 700 p.a. to 1750/- p.a. While sanctioning this scholarship factors like student living in a hostel, type of institution, rural or urban area and the need of the candidate are taken into consideration.

Eligibility—The Scholarship is awarded for the studies after passing of Secondary School Examination which he should have passed with 50% marks.

Selection Process—Out of the 20000 scholarships 100 scholarships are earmarked for study of M.A., M.Sc., M.Com., etc. and the rest 19900 scholarships are offered for degree or post-graduate courses of education (except M.A., M.Sc., M.Com.). Out of the quota allotted to a particular state 95 percent of the scholarships are for those who are studying for first graduation after passing the Secondary School Examination and the rest 5 percent of the scholarship are for those who complete their first year of the three year degree course.

Age—There is no age limit but a candidate must be eligible to get admission into the regular course of education in the University.

Other Conditions—For those candidates who are doing their post-graduation or have undertaken research work, there is no income limit of candidate's parents. But for other courses of education, candidate whose parents' income exceeds Rs. 6000/- p.a., he is not eligible.

Last Date of Submission of Applications—Each Directorate of Education of a State invites applications through an advertisement. Candidates have to apply against such an advertisement approximately by the end of the month of May each year.

(6) Scholarships for Young People Working in Different Cultural Fields

Number of Scholarships—75 (seventy five).

Subjects—Music, Dance, Drama and Traditional Theatre, Tibetan Painting, Wood Craft, Rare Arts, Fine Arts, etc.

Duration—2 Years.

Educational Qualifications and Experience—Adequate knowledge of the respective art.

Age—18 to 28 years.

Rate of Scholarship—Rs. 350/- p.m.

(7) Scholarships for Post-graduate Studies in Engineering and Technology

Number of Scholarships—Not fixed.

Rate of Scholarship—Rs. 600 - p.m.

Duration—2 Years.

Purpose—Post-graduate studies.

Eligibility—Candidates must have secured 60% marks in the qualifying examination. 55% marks for SC/ST.

Selection—Selection of candidates is made by the respective Engineering College.

(8) Scholarships for High School Student.

(A) Scholarships for students in residential schools

Number of Scholarships—500 (five hundred).

Rate of Scholarship—Tuition fees, book grant, lodging and boarding charges, pocket money, bus pass etc., are the facilities offered to selected candidates.

Eligibility: Candidates between the age group of 11 and 12 are eligible. Candidates are selected at two levels. The State Government holds a preliminary test. Those who have qualified this test are recommended by the State Government to the Central Board of Secondary Education which holds another test. Those who are successful in this test are given the scholarship. Candidates 'whose parents' annual income is more than Rs. 6000/- are not eligible for this scholarship.

Out of the 500 hundred scholarships, 250 are offered to students on the basis of merit marks at national level and the remaining 250 scholarships are distributed among the states as per the quota allotted to a particular state in accordance with the merit marks obtained by the state testees.

Last Date of Submitting Applications—Applications are invited in the month of May/June each year by the State Directorate of Education through advertisement. The examination is held some time in September/October in that year only.

(B) Scholarship for Talented Students from Rural Area

Number of Scholarships—28000 (twenty eight thousand).

These scholarships are distributed as follows:

- | | |
|--|----|
| (1) Each Community Development Block | 3 |
| (2) Each Tribal Community Development Block | 3 |
| (3) Each Community Development Block having 20% or more population of SC/ST. | 11 |
| (4) Landless people in each Community Development Block. | 1 |

Rate of Scholarship—They are as follows:

- | | |
|-----------------------|----------------|
| (1) Hostellers | Rs. 100/- p.m. |
| (2) Others (XI & XII) | Rs. 60/- p.m. |
| (VII to X) | Rs. 30/- p.m. |

In addition tuition fees are also paid.

Subject to Study—10+2 stage of Education.

(C) Cultural Talent Search Scholarship

Number of Scholarships—125 (one hundred twenty five).

Rate of Scholarship—Where a candidate ordinarily resides Rs. 600/- p.m.

At other places — — — Rs. 1200/- p.m.

In addition, tuition fees are paid subject to maximum being Rs. 1000/- p.m.

Duration—This scholarship is available till a candidate completes his school education or till he attains 18 years of age.

Purpose—To achieve proficiency in musical and dancing art.

Eligibility—Candidates between the age group of 10 to 11 are eligible.

Selection - Candidates are selected at two stages—once at the state level by the State Government and subsequently at the national level by the Central Education Ministry.

(9) Scholarships for SC/ST

These scholarships are open to SC/ST nationals of India only and will be given for study of all recognised post-matriculation full time courses pursued in recognised institutions.

All candidates are eligible.

Rate of Scholarship - There are two rates depending upon the course of studies and ranges from Rs. 40/- p.m. to Rs. 75/- p.m.

Hostellers get more amount as maintenance charges than day scholars. In addition to maintenance charges the scholarship holders are also paid fees compulsorily payable by them.

The scholarships depend upon the income of the parents as follows.

(A) Income upto Rs. 500/- p.m. Full maintenance Allowance.

(B) Income between Rs. 500 to 750/- p.m.

High Technical studies..... Full maintenance Allowance.

Degree & Diploma courses.. ... Half maintenance Allowance.

(C) Income more than Rs. 750 - p.m. No scholarship.

(D) Students employed full time..... No scholarship.

The scholarships are paid through the institution where the candidate is getting education.

At some places there are independent hostels exclusively for these boys. In such hostels boys are not to pay for their lodging and boarding. In addition, they get some pocket money. They are also given bus passes for local journey to attend school, of course, admissions in the hostel are made on merit.

CHAPTER 55

FACILITIES FOR HANDICAPPED PERSONS

Disability is no liability is a maxim coined after experiencing the capacity of handicapped people in contributing their share in the nation's gross productivity. It is a moral obligation of a state and society to arrange for handicapped persons' feeding, emancipation, enlightenment and rehabilitation. It is a grave problem of rehabilitation of the handicapped. Handicapped persons are an integrated section of a society. These unfortunate people are the victims of providence, accident, diseases, poor quality food and drug addiction. Appreciation and understanding of problems of the handicapped is the duty of all citizens, social workers, organizations, State or Central Governments. It is necessary to find out residual capacities of the handicapped and make them more useful citizens of the country.

In our country no exact figures are available of the handicapped. However, it has been estimated that in our country there are 40 lakh blind people, 20 lakh deaf and dumb and one crore 40 lakh orthopaedically handicapped people. Central Ministry of Social Welfare, Central Board of Social Welfare and Social Welfare departments of all State Governments and Union Territories arrange for education, training, employment and rehabilitation of the handicapped through various programmes. Besides, voluntary organizations also contribute to the welfare of the handicapped. There is a drastic change in the outlook toward the handicapped.

Government of India have set up three institutions at national level at Dehra Dun, Hyderabad and Calcutta for the rehabilitation of the blind, deaf and dumb and orthopaedically handicapped. There are schools set up where these people receive education, lodging and boarding facilities being free of cost. More stress is being laid on integrated education in which handicapped persons can receive education alongwith able bodied students so that the handicapped should not feel isolated from the main stream of the society, should not feel difficult and should not suffer from inferiority complex.

Under the Central Government establishments all these three categories of handicapped have been offered reservation of 3%, 1% for each category having a facility of interchange in case no candidates are available in a particular category. It is seen that in comparison to able bodied persons handicapped persons are

more regular, punctual, obedient, efficient in discharging their duties. In reality, if these handicapped people get an appropriate occupation commensurate to their residual capacities, there is no reason as to why they should not equal or even surpass the productivity of the other persons. The handicap does not remain the handicap at all in such situations.

I. Facilities offered by the Central Government

In India there are a number of schemes launched for education, training, scholarships, employment, rehabilitation of the handicapped. In the schools set up for the handicapped, alongwith general education, the handicapped are given vocational training so as to make them able to live a useful life after leaving the school.

Education and Training

(1) **National Centre for the Blind, Dehra Dun**—This centre was set up in 1950. There are seven departments in which instructions are imparted on education, training, welfare and rehabilitation to the blind. They are as follows:

Model School for Blind Children—Blind children are taught upto 10th class. They are provided free accommodation, food, clothing and education. Day blind scholars are also admitted. All these taught science, general knowledge, general science, Hindi, English, Mathematics, Economics, Civics, History, Music, etc.

Under arts and crafts training they are also taught paper work, woodwork, clay modeling, weaving, tailoring and home science. Medium of instruction is Hindi, however English is taught from the beginning. Emphasis is given on physical education and live independently through asking them to wash their clothes, prepare their beds, clean the floor daily. Boys between the age-group of 6 to 16 are admitted.

(2) **Training Centre for Adult Blind**—Blind male and female adult candidates are sought certain vocations so as to make them able to them independently. Candidates must be between 18 to 40 years and they should not suffer from any other disability except blindness. Candidates are divided into two groups:

- (i) Those who are blind from their childhood,
- (ii) Those who have lost their vision only recently.

It is expected that those who are blind from childhood should have got education for three years in a blind school. Female candidates are given exemption of this condition. There are 130 seats for males and 50 for females. The different courses that are taught are as follows:

<i>Name of the Course</i>	<i>Duration</i>
<i>(I) Home Craft Unit</i>	
(1) Newar weaving	18 months
(2) Chair caning and bamboo work	18 months
(3) Manufacture of wax candles	1 month
(4) Manufacturing bags & boxes from nylon and plastic threads	4 months
(5) Embroidery	12 months
(6) House decoration	12 months
<i>(II) Industries Unit</i>	
Light Engineering work	6 months
<i>(III) Vocational Trades Unit</i>	
(1) Indian Braille	3 months
(2) Standard English Braille	3 months
(3) Type writing (English)	12 months
(4) Type writing (Hindi)	12 months

Every candidate has to select a principal subject in addition to Braille typing and music, chair caning, weaving and light engineering work is for males and chair caning and weaving for females.

(3) **Braille Equipment Manufacture Workshop**—This unit manufactures equipments for the blind.

(4) **National Library for the Blind**—To create Braille literature for blind readers this library has been set up which contains 20000 books.

(5) **Central Braille Press**—Literature prepared in Hindi and English is made available to the blind readers at concessional rates.

(6) **Sheltered Workshop for the Blind**—This workshop was established in 1954. Arrangements for training and employment are made in light engineering works, woollen textile, chair caning. Employees get the facilities of provident fund and medical treatment

(7) **School for the Partially Sighted Children**—Partially sighted children are taught upto 8 the class in this school.

II. National Centre for the Deaf, Hyderabad

(A) **Training Centre for the Adult Deaf**—With an aim of providing vocational training to adult deaf people this centre was established in 1962. Stress is laid on practical training with occasional instruction in theory. Lip reading is also taught. Candidates of both the sexes between 16 and 25 are trained in sheet

metal work, wiremanship, fitting, welding, cutting and tailoring, carpentry, turning, photography. Admission is available to those who are deaf from childhood and have been educated for at least five years in a school for the deaf. Those candidates who have become deaf not more than three years earlier, have been deputed by a recognised institution or whose employers give guarantee of employment are also admitted on priority basis.

Every year 100 candidates are admitted. Duration of training is of two years. Candidates whose parents' monthly income is less than Rs. 500/- are given free accommodation, food, clothing and training. Others have to pay.

(B) School for Partially Deaf Children—Partially deaf children are taught tailoring, embroidery, music, reading and talking. Children between 6 to 14 years of age are admitted.

Model School for Mentally Retarded Children, New Delhi—Set up in 1964 this school offers training to mentally retarded children between the age group of 6 to 12 and having an I.Q. between 50 to 75. Children should be free from other diseases. Central Government employees' children of the type get priority in the school for admission.

National Institute for the Orthopaedically Handicapped, Calcutta—This Institute identifies needs of rehabilitation of the handicapped and offers training.

Institute of Physically Handicapped, New Delhi—Courses in physiotherapy and occupational therapy are taught in this institute. There are 75 seats. There is also a sheltered workshop accommodating 70 handicapped persons. They learn and earn simultaneously.

In the outdoor department of the Institute there is a therapy room in which rehabilitation services are offered.

Training of Teachers for the Blind—This training is offered in the following institutions:

- (1) Victoria Memorial School for Blind, Bombay.
- (2) Ramkrishna Mission Ashram, Narendrapur, Calcutta.
- (3) Blind Relief Association, Delhi.
- (4) Government of Tamil Nadu, Madras.

50 trained teachers get training each year. Candidates having passed SSC and possessing certificate or diploma in teaching are selected for training of teachers for the blind. Duration of the course is of one year.

Training of Teachers for the Deaf—In the Teachers' Training College, Lucknow, there is a facility of training of teachers for the deaf also. Intermediate examination passed candidates between

19 to 26 age group are eligible for admission. Duration of the course is of one year. Training is free. Deserving candidates get stipend. 20 teachers are trained every year.

Integrated Education Scheme—In accordance with the national policy of education, a scheme of educating handicapped children alongwith other children was drawn in 1974 and is being implemented in some of the States.

Other Educational Facilities—Handicapped children are allowed to appear for examinations as private candidates. They are given the services of writers free, allowed to use typewriter during examination and can offer art subjects in place of maths and science.

SCHOLARSHIP SCHEMES

Central Social Welfare Department offers some 7000 scholarships every year for handicapped children studying in different schools in the country from 9th class upto higher education including certificate, diploma and degree courses of all types. Candidates getting education through correspondence courses are also eligible. All other conditions are the same as are applicable to able bodied persons.

EMPLOYMENT FACILITIES

To offer assistance in matters of employment, rehabilitation and vocational guidance to handicapped persons, special employment exchanges have been set up. Central Ministries/Departments give concessions and facilities to these people. Disabled ex-servicemen get special facilities.

Special Employment Exchanges are at Ahmedabad, Bhubaneshwar, Bombay, Calcutta, Chandigarh, Delhi, Hyderabad, Jabalpur, Jaipur, Kanpur, Madras, Patna, Shimla, Gauhati, Trivandrum and Agartala.

Various concessions and exemption in recruitment of the handicapped under Central Government establishments.

Priority III, 3% reservation in group 'C' & 'D' posts (1% each for the blind, deaf & dumb and orthopaedically handicapped, interchangeable where candidates are not forthcoming in a particular category, facility of carry forward, identification of jobs for the handicapped, provision of equipments, age relaxation by 5 years, exemption from typing for clerical jobs, appointments based on medical examination at the time of appointment, handicaps ignored if a candidate is otherwise suitable and sympathetic consideration. In some of the public sector undertakings, these handicapped people enjoy age concession of 5 years, exemption in examination fee, 5% relaxation in marks, ordinary graduate in

place of second class graduate, exemption in typing. Disabled ex-servicemen get priority I in civil employment, two dependents of disabled ex-serviceman or killed in action get priority II in Government employment.

VOCATIONAL REHABILITATION PROGRAMME

There are 14 vocational rehabilitation centres in the country which offer the following services to the handicapped.

Vocational evaluation, medical examination, vocational and psychological rehabilitation, acquainting with facilities, sponsoring them to institutions for help, confirm the view that handicapped are able to complete, create awareness among the public about the need of rehabilitation of the handicapped, offer training in various occupations etc

Training in Health Care

(1) **All India Institute of Speech and Hearing, Mysore**—Training in speech and hearing, daily chores, research and guidance is offered in this institute. Patients suffering from these deficiencies are treated here.

(2) **All India Institute of Physical Medicine and Rehabilitation, Bombay**—Medical and paramedical personnel are trained in rehabilitation of the handicapped in the following areas:

- (a) Vocational Counselling and Nursing—4 to 8 months.
- (b) Medical Staff — 6 weeks
- (c) Physio and Occupational Therapy — 1 Year
- (d) Prosthetics and Orthotics
Engineering — 3 Year diploma.

(3) **Rehabilitation Centre of Safdarjung Hospital, New Delhi**—Services in Physiotherapy, Occupational Therapy, Medical Social Work, Vocational Counselling, Prosthetics and Orthotics are available in the centre.

NATIONAL SCHEME FOR MEDICAL REHABILITATION

Under the Scheme artificial limbs are provided to the needy handicapped. Artificial Limbs Manufacturing Corporation, Kanpur; Artificial Limb Centre, Pune are the two principal organizations which manufacture artificial limbs.

FINANCIAL ASSISTANCE PROGRAMME

To make the handicapped self-reliant and resettled in life, the department of social welfare of the Central Government, nationalised banks and other organisations extend financial assistance. Institutions engaged in education, training, employment are also

provided financial help and grants, provided they fulfill certain conditions. Central Social Welfare Board also gives similar assistance to voluntary organisations doing work for the handicapped.

NATIONAL AWARDS SCHEME

To promote employment of the handicapped, the department of social welfare has instituted national awards in 1969 under which every year the most skilled handicapped persons and organizations doing good work for the handicapped are selected for the awards. It is applicable to all establishments—public as well as private. Two awards each of the three categories of the handicapped and one award for the organization employing each category of the handicapped are given in a function.

OTHER CONCESSIONS AND FACILITIES FOR THE HANDICAPPED

Central Govt. servants of the categories get priority in Govt. accommodation, Indian Railways give concession to these people in rail fare in first and second class but not air-conditioned class. Indian Airlines give 50% concession in air fare handicapped persons having their vehicle get 50% concession in petrol/diesel cost, braille literature is exempt from postal charges; imported equipments for the use of the handicapped are exempted from customs duty, rebate of Rs. 5000/- is given for income tax purposes, banks give loans on differential rate of interest etc. Similar concessions are also offered by the State Governments. Central Govt. gives Rs. 75 to its employees as transport allowance.

There is a trend in providing modern equipments to the handicapped such as crutches, wheel chairs, automobile chairs, battery propelling wheel chairs, perambulation platform, binoic laser cane, sonny guide, optacon, talking typewriter, sign language, teletype, C.C T.V. magnifier, dogguide etc.

Under various self-employment schemes there are many more concessions and facilities for the handicapped given by various organizations. Detailed information can be had from Vocational Rehabilitation Centre, Special Employment Exchange, University Employment Information and Guidance Bureau, Small Industries Service Institute, District Industries Centre etc.

CHAPTER 56

CAREERS IN CHEMISTRY

Chemistry is a science of materials which are of use in other branches of science. That is why chemistry is an important link science. There are innumerable things which are formed because of their mixture and prove vital for animal life. Such formations of things are caused by two processes: one process is natural and other is manmade. In both the processes certain principles and laws are involved. These are the principles and laws of chemistry.

In everyday life we use materials of varied forms and for a variety of purposes. Advances in chemistry have contributed tremendously to make our lives comfortable and easier. We are quite familiar of an old method of producing fire. The early man was producing it by constantly rubbing two pieces of dry wood against each other. The friction caused fire; or striking two pieces of flint stones keeping a ball of cotton in between. By friction the ball of cotton catches fire. Now we hardly make use of this process because other easy and safe methods have been found out.

A little of red phosphorus on the side of a match box and some easily combustible material in a head of a match stick have made a process of producing fire easy. This is the case of advancement of knowledge of chemistry and is manmade. Through a natural process we get water which is formed of two gases *viz* oxygen and hydrogen. Two parts of hydrogen and one part of oxygen make water. All these things are caused because of chemical reactions intentionally done or naturally take place.

As we move from these simple processes to increasingly complicated ones, we get many more things for daily use or for use in our industries. With the discovery of light metals like aluminium and titanium aeroplanes are being built. We have reached a stage of crossing barriers of our globe and make jaunts to the Moon or the Mars through manmade space craft.

With an increase in population our natural resources have dwindled in their stock, we have had to shift our strategy and prepare substitutes for several ordinary materials. As substitute for natural fibre like cotton, silk and wool we have now synthetic fibres like viscose, nylon, terylene, orlon, etc. As a substitute for leather we are making use of PVC or plastics. Several other forms of

plastics are used for making domestic items like buckets, plates, containers and a variety of decoratives. All these things are light and have durability and are easy to carry and use. Polythene sheets are used for a variety of purposes presumably for making the life of man comfortable and easy.

This all happens because of the inventions and discoveries in the field of chemistry. Looking through this angle knowledge of chemistry has contributed a lot in the development. People working in the field of chemistry, therefore, are of significance and do a yeoman service to humanity. Careers in chemistry for young people have a lot more to offer in terms of contribution and satisfaction.

EMPLOYMENT

Various employment opportunities are available for graduates including graduates in chemistry information on which has already been incorporated in many chapters of this book especially in the chapter 'Careers for Graduates'. Here an attempt has been made to make a mention of such opportunities presumably to keep the link of the topic. Readers may like to refer those chapters for further details.

Employment Opportunities—Laboratory Assistant—Chemical, Soil, Geological—Slide Examiner, Laboratory Technician, Senior Observer, Demonstrator, Harbarium Assistant, Scientific Assistant, Reference Assistant, Research Assistant, Programmer Assistant, Professional Assistant, Shift Assistant, Oceanographic Assistant, Teachers of various kinds and levels; Opportunities of commissioned and non-commissioned officers in the three wings of Defence Forces, opportunities through competitive examinations of the Central and State Govts; subordinate executive posts like Excise Inspector, Customs Inspector, Income Tax Inspector, Sales Tax Inspector, Labour Sub-Inspector, CBI Sub-Inspector, Auditor etc.; management trainees, apprentices, clerical and Sales occupations, Assistants, stenographers, typists, opportunities in the railways as Station Masters, Guards, Ticket Checkers, Ticket Examiners etc. Recruitment to all these posts is done through Public Service Commissions for officer's grade and through Employment Exchanges for other grades. Another source is that of advertisements appearing mostly in Employment News.

Table Indicating Various Courses for Graduates in Chemistry

<i>Sl.No.</i>	<i>Course</i>	<i>Duration</i>	<i>Institution</i>	<i>Subjects</i>	<i>Mode of Admission</i>
1.	B. Sc. (Tech)	3 Years	University Department of Chemical Technology, Matunga, Bombay	Textile Chemistry, Food Technology, Technology of Intermediates and Dyes, Technology of Plastics, Technology of Paints, Pigments and Varnishes, Technology of Oils and Fats and Waxes, Technology of Pharmaceuticals and Fine Chemicals	B.Sc with Chemistry (Principal) and Physics (subsidiary)
2.	B. Sc. (Tech)	3 Years	Luxminarayan Institute of Technology, Nagpur	Oil Technology, Food Technology, Petrochemical Technology and Cellulose Technology	B.Sc. (Chemistry Principal) with Maths, Physics as subsidiary. Must have passed first year of B.Sc. with Physics, Chemistry & Mathematics.
3.	B.E.	3 Years	College of Engineering, Pune	Instrumentation and Control Engineering	B.Sc. with any combination of Physics, Chemistry and Maths. Only Bombay University B.Sc. with Physics + Maths or Maths + Physics.
4.	B.Tech.	3 Years	Harcourt Butler Technological Institute, Kanpur	Biochemical Engineering; Food, Paints, Oils and Plastic Technology	B.Sc. with Physics, Maths and Chemistry.

<i>Sl.No.</i>	<i>Course</i>	<i>Duration</i>	<i>Institution</i>	<i>Subjects</i>	<i>Made of Admission</i>
5.	M.Sc.	2 Years	Central Food Technological Research Institute, Mysore	Food Technology	Second Class degree in Science, Agriculture, Engineering or Technology with adequate knowledge of Chemistry & Maths at Collegiate level.
6.	B.Tech.	3 Years	Jadavpur University, Calcutta	Food Technology and Biochemical Engineering	B.Sc. (Hons.) in Chemistry with Physics and Maths as subsidiaries.
7.	Scientific Officer	1 Year	Bhaba Atomic Research Centre, Bombay	Chemistry, Physics	M.Sc. (First division or 60%) with Maths at subsidiary level and Chemistry (Principal)
8.	A.I.C.	—	Institution of Chemists (India) Chemical Deptt., Medical College, Calcutta	Examination of Institution of Chemists (India)	B.Sc. with Chemistry as Principal, 3 Years Practical Experience at the time of registration.
9.	Diploma	4 Years	Victoria Jubilee Technical Institute, Matunga, Bombay	Food, Drugs and Cosmetic Analysis	B.Sc. with Main Chemistry.
10.	Diploma	2 Years	-do-	Oils and Paints	-do-
11.	Diploma	1 Year	Govt Polytechnic, Vidyanaagar, Kolhapur	Sugar Technology	-do-
12.	Diploma	1 Year	Grant Medical College, Bombay	Medical Laboratory Technology	B.Sc. with Microbiology/Chemistry Zoology as Principal.
13.	-do-	-do-	Seth Gordhandas Sunderdas Medical College, Parel, Bombay	-do-	-do-

14.	-do-	-do-	Topiwala Medical College, Bombay	National Medical College, Bombay			
15.	Diploma	1 Year	Lokmanya Tilak Municipal Medical College, Bombay	Medical Technology	Laboratory	B.Sc. with Microbiology/ Chemistry, Zoology as Principal	
16.	-do-	-do-	Goa Medical College, Panaji	-do-		-do-	
17.	-do-	-do-	Haffkine Institute, Bombay	-do-		-do-	
18.	Diploma	1 Year	Institute of Hotel Management, Catering Technology & Applied Nutrition, Bombay	Dietetics		Graduate in Home Science/ Nutrition, Chemistry, Biology/ Biochemistry, MBBS.	
19.	Diploma	1 Year	College of Social Work, Nirmal Niketan, Bombay	Dietetics and Nutrition	Applied	B.Sc. (Home Science/ Chemistry/ Microbiology)	
20.	Diploma	2 Years	Central Fisheries Institute of Education, Bombay	Fisheries Science		B.Sc. with Science as principal or subsidiary. Preference Chemistry and Botany.	
21.	Diploma	1 Year	Central Labour Institution, Bombay	Industrial Safety		Diploma in any branch of Engineering or Technology or B.Sc. with Physics and Chemistry.	

Sl.No.	Course	Duration	Institution	Subjects	Made of Admission
22.	Diploma	2½ years	National Sugar Institute, Kanpur	Sugar Technology	M.Sc. Second Class. Should have passed B.Sc. with Chem/Phy/Maths/B.Sc. First Division with above subjects. B.Sc. with 40% in above subjects + 5 years experience/ B.E. (Chemical, Mechanical or Electrical).
23.	Diploma	1 Year	-do-	Industrial Fermentation and Alcohol Technology	B.Sc. with experience in a Distillery.
24.	Diploma	2 Years	Institute of Paper Technology, Saharanpur	Pulp & Paper Technology	B.Sc. in Physics, Chemistry and Maths with 50% marks.
25.	Diploma	2 Years	Institute of Paper Technology, Saharanpur	Process Instrumentation	B.Sc. in Physics, Chemistry and Maths with 50% marks.
26.	Certificate	1 Year Part-time	Sasmira's Institute of Man Made Textile, Bombay	Dyeing and Finishing of Wood	B.Sc. with Chemistry or Diploma in Textiles.
27.	Certificate	1 Year	Haffkine Institute, Bombay	Drug Analysis (Chemical)	B.Sc. (Chemistry Principal), Physics subsidiary.
28.	-do-	3 months	-do-	Practical Laboratory Techniques	B.Sc.
29.	-do-	1 Year	4 Forest Rangers' College (See Careers in Forestry)	Forestry	(See Careers in Forestry)

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|--------------------|---------|---|--|--|
| 30. Diploma | 2 Years | Indian Forest College,
Dehra Dun | Forestry | (See Careers in Forestry) |
| 31. Ad hoc Courses | — | Plastics & Rubber Institute,
Indian Petro-Chemicals Ltd., Bombay | Plastic and Rubber | B.E. (Mech Elec. Engg.) + 1 Year Exp. in Plastics Industry or B.Sc. (Chem.), B.Tech (Chemical Engg.) + One Year Exp. in Plastics Industry. |
| 32. Certificate | 8 Weeks | National Archives of India, New Delhi | Care and Conservation of book manuscripts & archives | Second class graduate with Chemistry at Higher Secondary Stage. |
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Employment Fields with Short Description of Their Activities For Employment of Graduates in Chemistry

<i>Establishment</i>	<i>Field of Work</i>
1. National Chemical Laboratory, Pune	Basic & applied research in chemistry of solid state, rare metals, radiation, dye stuff, microcyclic compounds, polymers, enzymes & chemical engineering.
2. Research Institute, Dhanbad	Fundamental and applied research on fuels. Solid, liquid and gaseous conducts, Chemical Survey of Indian Coal.
3. Central Glass and Ceramic Research Institute, Calcutta	Glassware and service products, standardization of raw material & gaseous conducts, Chemical Survey of Indian Coal.
4. Central Food Technological Research Institute, Mysore	Modern methods of storage, preservation, packing, handling & processing of food materials, development of nutritious supplementary and substitute food, etc.
5. National Metallurgical Laboratory, Jamshedpur	Basic and applied research on indigenous ores and minerals, ferrous and non-ferrous metals and alloys, etc.
6. Central Drug Research Institute, Lucknow	Study of drug plants, standardization of crude drugs, manufacture of drugs, develop contraceptive devices, etc.
7. Central Electro-Chemical Research Institute, Karaikudi	Exploratory, applied & fundamental research in electro-chemistry, electrolytic production and electric furance products.
8. Central Leather Research Institute, Madras	Development of Technology for Manufacture of wide variety of leather auxiliaries and allied products and designs of leather machinery and implements.
9. Central Salt and Marine Chemical Research Institute, Gujarat	Improvement of quality of sodium chloride, utilization of marine chemicals and by-products, etc.
10. Central Mining Research Station, Dhanbad	Research on methods of mining, safety in mines, development of mine machinery and testing of equipment use in mines.

11. Regional Research Laboratory, Hyderabad
Research on problems of oils and fats, surface coating, coal organic chemicals and drugs, industry ceramics, paper & cellulose products, mineral products, etc.
 12. Indian Institute of Experimental Medicine, Calcutta
Fundamental research in biological science for solution of medical problems including Biochemistry, Microbiology, Medical Chemistry & Pharmacology.
 13. Regional Research Laboratory, Jammu-Tawi
Research on problems relating to industries and raw materials of the Himalayan Region especially in medicinal plants.
 14. Central Public Health Engineering Research Institute, Nagpur
Research on water treatment and supply, river and stream sanitation, treatment and disposal of sewage and industrial waste, air-pollution, etc.
 15. Central Indian Medicinal Plants Organization, Lucknow
Devise improved methods of plant cultivation, breeding, etc.
 16. Regional Research Laboratory, Jorhat
Research and development work on efficient utilization & better observation of natural resources as coal, petroleum, lime-stone, bamboo, reeds, etc.
 17. Indian Institute of Petroleum, Dehradun
Research & Development work on processing and utilization of crude petroleum and natural gas.
 18. Regional Research Laboratory, Bhubaneswar
Research and development work on paper, pulp, fibre, leather, fish and fish oil, minerals, oils and agricultural and animal husbandry products.
 19. Industrial Toxicology Research Centre, Lucknow
Harmful effects of industrial toxin on skin, blood, gastro-intestinal tract, central nervous system, bones etc. studied for developing preventive measures.
 20. Bose Institute, Calcutta
Research in chemistry, plant physiology, plant breeding, microbiology, cytogenetic & zoology.
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<i>Establishment</i>	<i>Field of Work</i>
21. National Institute of Oceanography, Panaji.	Research on various aspects of Physical, Biological Geological & Chemical Oceanography.
22. Birbal Sahni Institute for Palaeobotany, Lucknow.	Research in fossils, flora of India and related problems.
23. Indian Association for Cultivation of Science, Calcutta	Research in fundamental & applied aspects of Physics and Chemistry.
24. Wadia Institute of Himalayan Geology, Delhi	Studies on Geology of the Himalayas, their mineral resource, rivers, glaciers, etc.
25. Maharashtra Association for Cultivation of Science, Pune	Research in Botany, Mycology, Plant Pathology, Entomology, Biochemistry & Soil Science.
26. Indian Institute of Science, Bangalore	Advance instructions, original investigation in all branches of scientific knowledge.
27. Raman Research Institute, Bangalore	Research in Crystallography, liquid crystals and Radio-Astronomy.

Other types of laboratories also employ graduates in Chemistry. By and large graduates in Chemistry as also other graduates have wide openings of employment related to their field of study or even otherwise.

CHAPTER 57

CAREERS IN NURSING

Florence Nightingale affectionately and honourably called "The Lady with the Lamp" set an unprecedented example to humanity of a kind of service to it. She organised the nursing service in aid of soldiers wounded in the Crimean war. Born in 1820 she had a long and dedicated service record for 70 years for the ailing people. She was a nurse by profession. She died in 1910.

Another name that is studded prominently into the brilliant history of nursing is that of Mother Teresa, who has dedicated her life for the service of the destitute. She came all along from Albania to Calcutta and started her service. Because of her untired concern and devotion she has been awarded many prestigious prizes including the most famous Nobel Prize for 1979. India too has recognised her services and awarded the highest honour of 'Bharat Ratna', a rare honour bestowed on her.

That is the profession of Nursing—a service occupation. The element of service is nature-born. However, it does not mean it cannot be attained or acquired. Because of minute delicacies in the service of nursing are involved this profession has attained a stature of an art and a science. It is a service dedicated to relieve human pain and suffering. The profession of Nursing revolves round prevention of diseases and building health on one hand and relief and care of the suffering on the other. Professionals in this science provide nursing care for the ailing people as also perform other related tasks in hospitals, clinics, dispensaries, health centres, etc.

In trying moments such as wars, earthquakes, floods and similar other catastrophes or manmade grave situations this profession assays itself to the cause of suffering people, offer solace to them by offering their best care that humanity demands. Consideration of materialism, amassing a fortune, family consideration or even a thought of the self appear to be insignificant entities before the philanthropic and altruistic service to humanity in taking care of health of its members. The greatness of the profession lies in the fact that it not only serves patients or the sick well but also extends its help to others who are working in the field of medicine. It assists physicians and surgeons, dispenses medicines, gives vaccinations and inoculations, physiotherapy and occupa-

tional therapy, takes measures to improve public health, prepares eye glasses and performs other related technical and miscellaneous tasks. It plays a leading role in organising community health programmes too.

As the medicinal field is widening and acquiring new horizons through everyday advances in research and methodology, the profession of nursing has also to accommodate itself with the changing field accordingly. It is also getting expanded and various types of nursing profession are emerging. They may be termed as General Nursing, Auxilliary Nursing and Midwifery, Psychiatric Nursing, Anaesthetic Nursing, Public Health Nursing, Ward Sister. A nurse is a live wire of a hospital and remains ever fresh to meet the requirements of the suffering patients as also physicians and surgeons—be it an operation, dressing, dispensing or serving the patient. A warm word of a nurse relieves half the pain of a patient.

Training—Every state has arrangements for training of nurses. It is not possible to provide a list of such training institutes for it may require many pages. However, an attempt has been made to list out some of the institutes which train nurses at national level and offering different types of courses in nursing. Interested candidates may look for information on training of nursing in hospitals where such courses are organised.

All trainee nurses are provided lodging and boarding facilities. In addition, a fixed rate of stipend during the period of training, is also provided to deserving candidates.

Military Nursing Service:

Special arrangements for training of Nurses have been made for the use of our Defence Forces. This is called Military Nursing Service. There are two types of commissions in it as:

- I. Direct Entry Scheme, and
- II. Scheme for High/Higher Secondary School Leavers.

I. Direct Entry Scheme

Eligibility—Civilian female candidates are recruited into Military Nursing Service (MNS) temporarily in the rank of a Lieutenant. She must be in possession of certificate of training in an approved hospital and should have been registered with the State Nursing Council as a fully trained nurse. She must also be unmarried/divorced/separated/widow without encumbrances; within the age-group of 21-35.

On appointment in the MNS, they are eligible to draw pay in the grade with other usual allowances under the rules.

Selection is made by the Services' Selection Board through interviewing candidates.

Institutions Providing Nursing Training

Sl.No.	Institution	Age	Duration	Award	Qualification
1.	Leelabai Thackersey College of Nursing, Churchgate, Bombay	16 Years	3 Years.	B.Sc. (Nursing)	12th with chemistry and Biology with 50%
2.	College of Nursing, AFMC, Pune	17 to 25 Years	4 Years	B.Sc. (Nursing)	12th with Physics, Chemistry and Biology with 50%
3.	College of Nursing, AFMC, Pune	17 to 25 Years	11 Months	Orthopaedic Nursing	12th with Physics, Chemistry and Biology with 50%
4.	Institute of Nursing Education, Byculla, Bombay	38 Years	2 Years	B Sc (Nursing)	12th with Science subjects + Certificate of Registered Nurse or Midwifery
5.	College of Nursing, Fort, Bangalore	17 to 25 Years	4 Years	B Sc. (Nursing)	12th with Physics, Chemistry and Maths.
6.	College of Nursing, Indore	-do-	-do-	-do-	-do-
7.	College of Nursing, Jaipur	-do-	-do-	-do-	-do-
8.	College of Nursing, Kanpur	-do-	-do-	-do-	-do-
9.	College of Nursing, Hyderabad	-do-	-do-	-do-	-do-
10.	College of Nursing, Trivandrum	-do-	-do-	-do-	-do-
11.	College of Nursing, Vellore	-do-	-do-	-do-	-do-
12.	College of Nursing, New Delhi	-do-	-do-	-do-	-do-
13.	College of Nursing, Fort, Bangalore	-do-	3 Yrs + One Year Internship	Basic B.Sc. (Nursing)	-do-

<i>Sl.No.</i>	<i>Institution</i>	<i>Age</i>	<i>Duration</i>	<i>Award</i>	<i>Qualification</i>
14.	College of Nursing, Fort, Bangalore	No age limit	2 Years	Post-Certificate B.Sc. (Nursing)	12th with Physics, Chemistry and Maths.
15.	National Institute of Mental Health and Neuro-Sciences, Bangalore	—	1 Year	Diploma in Psychiatric Nursing	Registered Nurse + 2 Years Experience. Fluency in English
16.	Clara Swain Hospital, Bareilly	17 Years	3 Years	Nursing	12th with Basic Science
17.	-do-	17 Years	6 months	Midwifery	-do-
18.	-do-	17 Years	1 Year	Nurse	Must be a Staff Nurse
19.	Lady Reading Health School, Delhi	—	10 months	Anaesthetist Diploma in Public Health Nursing	Certificate in Nursing & Midwifery
20.	-do-	—	10 months	Sister Tutor Course	-do-
21.	R. A. K. College of Nursing, New Delhi	—	3 months	Post-Certificate Course and Sister	SSC or its equivalent + Certificate in Nursing + 2 Years experience
22.	-do-	—	10 months	General Tutor	-do-
23.	-do-	—	10 months	Administration (Nursing)	-do- + 5 Years Experience
24.	-do-	—	10 months	Midwifery Tutor Course	-do-
25.	R.A.K. College of Nursing, New Delhi	—	2 Years	Master of Nursing	B.Sc. Nursing + 2 Years Teaching Experience
26.	College of Nursing, Vellore	—	2 Years	-do-	-do-
27.	L.T. College of Nursing, Bombay	—	2 Years	-do-	-do-

Appointments are initially made for a period of six months only, however, they can continue to serve till such time that their services are required.

There are two schemes under which nurses in the Armed Forces are recruited.

- (1) Probationer Nurse, and
- (2) B.Sc. (Nursing) trainee.

(1) Probationer Nurses—Probationer Nurses are recruited for training in the following military hospitals:

- (a) Army Hospital, Delhi Cantt.
- (b) Command Hospital, Central Command, Lucknow.
- (c) Military Hospital, Jullundur Cantt.
- (d) Military Hospital, Secunderabad
- (e) I.N.H.S., Ashwini, Bombay, and
- (f) Air Force Hospital, Bangalore.

Eligibility—(1) A candidate must be unmarried, divorced/separated/widowed female without any encumbrances.

- (2) Be within the age-group of 17-29.
- (3) Passed 10th class with not less 45% in aggregate.
- (4) Producing of satisfactory reference to character.
- (5) Medically fit.

For selection applications are invited through an advertisement. A written test is held in English composition and essay followed by an interview.

(2) B.Sc. (Nursing) Trainees—B.Sc. (Nursing) trainees are recruited for B. Sc. (Nursing) Course of the duration of four years. Armed Forces Medical College, Pune conducts this course.

Eligibility—All conditions except qualification are the same as are applicable to probationer Nurses. Entrance educational qualification for B.Sc. (Nursing) Course is 10+2 with Science Stream.

Selection Procedure—Applications for entry into the course are invited through a newspaper advertisement. Selection is made through a written test in English followed by an interview.

Terms and conditions for both the types of Nurses—(1) Candidates admitted in the course are provided free furnished accommodation, fuel, light, conservancy, laundry, messing and services of servants.

- (2) They are granted a specific sum for uniform.
- (3) They enjoy vacation and casual leave.
- (4) They are eligible for leave travel concession and free medical treatment

After completion of the course satisfactorily, both the types of nurses are offered permanent commissions in the Military Nursing

Service in the rank of Lieutenant. They get promotion after a specific number of service and reach to the rank of a captain after which they rise to higher posts through a selection procedure.

Employment—Nursing is not a professional but a service. Candidates desirous of entering into this service should therefore, not view this service through the angle of monetary gains but to serve the sick and diseased patients. In the world of materialism, it may not be possible to isolate one from the mainstream and values of society. However, to keep a balance between service and profession, nurses are to give a predominant place to service. That will solve the problems of both the categories.

Employment opportunities are many more in nursing service. There are a number of hospitals run by various bodies like Central Govt., State Govts. public sector undertakings of Central as well as State Govts. Local self-Govts. like Corporations, Municipalities, private organizations and independent medical practitioners. All of these organizations invariably require the services of nurses.

Though it cannot be said that there is a shortage of nurses because they are trained as per the requirement of medical profession. However, it can definitely be said that more and more nurses are required to reduce the gap between availability of nurses and patients admitted into hospitals or otherwise. Those trained nurses are definite to get employment in one or the other organization. That way these trained nurses are safe so far as occupational opportunities are concerned.

All nurses who have been qualified have to register themselves with the Nurses Registration Council set up in each state after paying a prescribed fee. The main function of such councils is to accord recognition and inspections of examinations, besides registering qualified nurses. From these State Nurses Registration Council Registers, the Indian Nurses Council is compiled which discharges duties of regulating nursing education and training. It is located at Temple Lane, Kotla Road, New Delhi.

Nursing service is primarily wage paid oriented. However, there is a scope for self-employment also. Qualified nurses can attend to domiciliary deliveries. There are opportunities to work on part-time or daily basis in homes and sanatoria as private nurses to sick persons, physically handicapped, convalescents and incapacitated persons; nursing homes can be set up as also maternity and health centres and creches on commercial basis. Banks offer liberal loans to self employment ventures. As setting up of such centres/homes involves considerable investment, it would be better to form a cooperative of 2 or more nurses, Good returns are possible through such efforts.

There is a sort of inhibition among many women, including educated ones about careers in nursing. It is taken to be a low status job. This is a wrong notion ingrained in their minds. They should cast away such wrong notions and work in the profession purely as a profession only.

CHAPTER 58

CAREERS IN HOME SCIENCE

It is a long drawn controversy over the status of science; whether it is a boon or a curse. Indeed, it is difficult to decide its utility or otherwise because, first it has a potential for destruction or welfare; and secondly the trend is inclined towards ruination if at all, past experiences are any guide. There are constant efforts from the world's greatest humanitarians to adopt a path of welfare of humanity by adopting various scientific innovations to bring improvement in man and society. Such an approach requires working together of both: sciences and humanities. Such a possibility is contained in Home Science.

Benefits of chemistry, physics, hygiene, psychology, physiology, biology can very well be coordinated with economics, sociology, child development and family relations, community living and different arts. Home Science, therefore, has been said to be an integration of study of many disciplines for purposes of achieving and maintaining welfare as well as well being of family and its constituents. It is a maxim that first impressions last long. A visitor to a family/house if impressed at first sight carries with him the impression he gathers from the first sight. To maintain a good house is truly a specialised job and hence a discipline in itself which combines into one scientific knowledge and practical aspects of life.

Imprints of family culture are reflected on a wide screen of a nation. The importance of home science is that it reflects the true image of the society. It plays a great role in educating people for becoming good citizens, raising standard of their living, improving standard of living, preserving values enfolded and enshrined into a certain culture. This science is a prudent application of many sciences and arts to achieve efficient, better, healthier and happier homes. It creates women to become intelligent house managers, competitive housewives, capable mothers, efficient teachers and finally responsible citizens of the country.

It should not be interpreted that since women traditionally are looked upon to take care of homes, careers in home science need only be their preserve. It is because the nature has moulded and cut them into such a shape that they are the only lot to manage homes better than their male counterparts and hence they have unquestioned and uncompetitive occupational opportunities in the field, more so in the modern society.

Training.—Looking to complexities, delicacies, labour and tastes involved in maintaining home in the modern context the age-

old approach of inheriting values as a way of training have become obsolete or outmoded. This needs training for the efficient management and alert mind to take help of so many sciences and applying them to human values to impress upon. This automatically leads to acquire systematic training and study of various facts of home management *i.e.* home science.

There are quite a few institutions which train women in home science leading to under-graduate, graduate and post-graduate courses in home science. Doctoral courses are also available. Initially started in 1932 as a Domestic Science subject, restricted to cover—food, dress and clothing, stitching, sewing, hygiene and human anatomy. It has gradually acquired a status and its coverage was extended to study of tailoring, embroidery, care of clothing, meal planning, preparation and preservation of food, toy making and household accessories, textile printing and dyeing, decoration of domestic items etc by virtue of which it became quite popular among women.

Following table indicates institutions which offer various courses in home science.

Educational Facilities for B.Sc./M.Sc./Ph.D. Home Science in India

Sl. No.	Name of the Institution	Courses	Eligibility	Duration	Domicile restriction, if any
1	2	3	4	5	6
1.	College of Home Science, Haryana Agricultural University, Hisar.	B.Sc. Home Science.	Matriculation or equi. from a recognised Board/University with at least 50% marks.	4 Years.	Residents of Haryana only.
	-do-	M.Sc. Home Science.	B.Sc. (Home Sc.) or equi. with OGPA 2.75 (in case of HAU graduate relaxable upto 2.50/4.00 will be permissible).	2 Years.	-do-
	-do-	Ph D. Food & Nutrition.	M.Sc. in Foods & Nutrition.	2 Years.	-do-
2.	College of Home Science, Punjab Agricultural University, Ludhiana.	B.Sc. Home Science.	Matric/Hr Sec. Part-I or equi. with 55% marks.	4 Years.	Residents of Punjab and Chandigarh.
	-do-	B.Sc. Home Science	Hr. Sec. or Pre-University or equi. Medical/Non-Medical/Home Science or Agriculture with 55% marks.	3 Years	-do-

1	2	3	4	5	6
	College of Home Science, Punjab Agricultural University, Ludhiana.	M.Sc. Home Science	B.Sc. (Home Science)/ B.Sc. (Home Science) (Hons) with 59% marks in aggregate on a grade point average of 2.70/4.00	2 Years.	Residents of Punjab and Chandigarh.
	-do-	Ph.D. in Foods and Nutrition, Home Management	Grade point average of 3.4/4.00 basis or 60% marks at the Master's level and a grade point average of 2.00 (4.00) basis or 50% marks at the Bachelor's level	2 Years	-do-
3.	Govt. Home Science College, Chandigarh.	B.Sc. Home Science	Higher Secondary with 55% marks	3 Years.	Information not available.
	-do-	M.Sc. Home Science in Clothing and Textile, Food and Nutrition	B.Sc. Home Science with 55% marks	2 Years	-do-
4.	Institute of Home Economics (University of Delhi), South Extension, Part-I, New Delhi	B.Sc. Home Science (General)	1st Year B.Sc. Home Science Course with 40% in aggregate including English and any three of the following subjects in the undermentioned examinations:	3 Years.	No domicile restriction.

<p><i>Group A</i> Home Science with any two of the following: (1) Economics, (2) Psychology (3) Sociology, (4) Physics, (5) Chemistry and Biology.</p> <p><i>Group B</i> (1) Physics, (2) Chemistry, (3) Biology, (4) Maths. or equi.</p>	<p>Candidate should have passed 3 Years. B.Sc. (Hons.) Botany/ Zoology with Physics, or B.Sc. (Gen.) Grade-B with Physics or Ist Year Pre-medical/Inter Science (Medical group) or equi.</p>	<p>-10-</p>	<p>Domicile restriction is there.</p>
<p>5. Lady Irwin College (University of Delhi) Sikandra Road, New Delhi.</p>	<p>B.Sc. Home Science (Gen.)</p>	<p>1st year B.Sc. Home Science Course with 40% marks in aggregate including English and any three of the following subjects in the under-mentioned examination:</p>	<p>2 Years.</p>
<p><i>Group A</i> Home Sci. with any two of the following : (1) Economics, (2) Psychology, (3) Sociology, (4) Physics, (5) Chemistry and Biology.</p>			

1	2	3	4	5	6
			<i>Group B</i>		
			(1) Physics, (2) Chem., (3) Bio. and Maths.		
	Lady Irwin College University of (Delhi), Sikandara Road, New Delhi	B.Sc. Home Sc. (Hons.)	Candidates should have passed B.Sc. (Hons) Botany/Zoology with Phy. or B.Sc. (Gen.) Grade-B with Phy. or Ist Year Pre-medical/Inter Sc. (Medical group) or its equi.	2 Years.	Resident of Delhi only.
	-do-	M.Sc. Home Sc. in Foods & Nutrition.	55% marks in the aggregate in B Sc. Home Science in the concerned subject.	2 Years.	No domicile restriction.
		M.Sc. Home Sc. (Community Resource Management and Extension).	-do-	-do-	-do-
		M.Sc. in Child Development.	-do-	-do-	-do-
	-do-	Ph.D. Home Science Foods and Nutrition, Child Dev., Community	(A) M.Phil. Degree of Delhi University or its equi. in the subject in which the candidate desires to pur-	-do-	-do-

Resources management/Home	sue a course of research with 50% marks or an equi. grading.	
Management/Home Sc. Education.	(B) Have a good academic record with 1st or High Second Class Master's Degree of an Indian or Foreign University in the concerned subject or allied subject.	
6. Indian Agricultural Research Instt., New Delhi.	M.Sc. Home Sc.	B.Sc. Home Science with 55% marks. 2 Years. Information not available.
-do-	Ph.D. Home Sc.	M.Sc. Home Science with 55% marks. 2 Years. -do-
7. G.B. Pant Krishi Evam Praudyogik Vishwavidyalaya, Pant Nagar, Distt. Nainital (U.P.).	B.Sc. Home Sc	High School from U.P. Board. 4 Years. No domicile restriction.
-do-	M.Sc. Home Sc., Foods and Nutrition, Clothing and Textile.	B.Sc. Home Science with 55% marks or above in aggregate. 2 Years. -do-

1	2	3	4	5	6
8.	Allahabad Agri. Institut. Allahabad (U.P.).	Inter Home Science.	High School with scientific or Agri. groups or its equi.	2 Years.	No domicile restriction
	-do-	B.Sc. Home Science.	Inter with Science or its equi.	2 Years.	-do-
9.	Institute of Household Art and Home Science, Agra (U.P.).	B.Sc. Home Science.	Inter with Science or its equi.	2 Years.	-do-
10.	Banaras Hindu University, Varanasi (U.P.).	B.A./B.Sc.	10+2 Exam. with Home Science.	3 Years.	-do-
11.	Himachal Pradesh Krishi Vishwa-vidyalaya, Palampur, (H.P.).	2-Years Diploma in Home Sc.	High School/Matric or its equi. with atleast 50% marks.	2 Years.	Residents of H.P. only.
	-do-	M.Sc. in Food Sc. & Nutrition.	B.Sc. (Home Sc./Agri.) degree with an OGPA of 2.70/4.00 or its equi. or B.Sc. (Hons.) School with 60% marks or B.Sc. in any related subject with at least 65% marks.	2 Years.	-do-

12.	College of Home Sc., Sukhadia University, Udaipur (Rajasthan).	B Sc. Home Sc.	Hr. Sec. Science or its equi. with 50% marks.	4 Years.	No domicile restriction is there.
	-do-	M.Sc. Home Sc. Foods and Nutrition, Child Dev., and Family Relations, Home Management, Home Science Education.	B.Sc Home Sc. or equi.	2 Years.	-do-
13.	Ashee College of Nutritional, College of Home Sc. and Food Tech., Gujarat Agricultural University, Sardar Krishi Nagar. (Gujarat).	B Sc Home Sc.	Hr. Sec. or its equi.	3 Years.	Admission restricted for Gujarat State only.
14.	Post-graduate Deptt. of Home Science, Sardar Patel Uni., Vallabh Vidyanagar (Gujarat).	M Sc. Foods and Nutrition.	B Sc. (Home Sc.) or B.Sc. with Chemistry, Microbiology or Agri. with 'B' Grade	2 Years	No domicile restriction.
	-do-	Ph. D. in Home Sc., Foods and Nutrition.	M.Sc. in (Home Science) with IIInd Class.	-do-	-do-

1	2	3	4	5	6
15.	Sardar Patel College of Home Science, Vallabh Vidyanagar (Gujarat).	B.Sc. Home Sc.	Hr. Sec. with (i) Home Sc. stream, (ii) Science stream (iii) General stream with 45% marks.	3 Years.	No domicile restriction.
	-do-	M.Sc. Home Management.	B.Sc. Home Science.	2 Years.	-do-
16.	Gandhigram Rural Institute, Gandhigram (Gujarat).	B.Sc. Home Sc.	Hr. Secondary.	3 Years.	-do-
17.	M.S. University, Baroda (Gujarat).	B.Sc. Home Sc.	Pre-University or its equi.	3 Years.	Information not available
	-do-	M.Sc. Home Sc. in Child Dev., Foods and Nutrition, Home Sci., Education and Extension, Home Management and Clothing and Textile.	B.Sc. Home Science.	2 Years.	
	-do-	Ph.D. Home Sc.	M.Sc. Home Science.	2 Years.	-do-
18.	S.M. Patel College for Home Sc., Vallabh Vidyanagar, Anand (Gujarat).	B.Sc. Home Sc.	Pass in Preparatory Home Sc. exam. or equi.	3 Years.	Information not available

19.	B.D. College for Women, Ahmedabad. (Gujarat).	B.Sc. Home Sci.	Pre-University.	3 Years.	No domicile restriction.
20.	Govt. Girls P.G. College, Indore (M.P.).	B.Sc. Home Sci.	Higher Secondary.	3 Years.	-do-
	-do-	M.Sc. Home Sc., Home Management, and Child Dev.	B.Sc. Home Science.	2 Years.	-do-
21.	New Girls Degree College, Indore (M.P.).	B.Sc. Home Sc.	Higher Secondary.	3 Years.	-do-
	-do-	M.Sc. Home Sc., Food and Nutrition.	B.Sc. Home Science.	2 Years	-do-
22.	Jiwaji University, Gwalior. (M.P.).	B.Sc. Home Sc.	Hr. Sec with Sc. or in Home Sc. group with elements of Science as one of the subjects.	3 Years.	-do-
	-do-	M.Sc. Home Sc.	B.Sc. Home Science.	2 Years.	-do-
	-do-	Ph D. Home Sc.	M.Sc. Home Science.	2 Years.	-do-
23.	Govt. Girls Degree College, Rewa (M.P.).	B.Sc. Home Sc.	Hr. Sec /Inter or its equi.	3 Years.	Information not available

1	2	3	4	5	6
24.	M.H. College of Home Sc. for Women, Jabalpur (M.P.). -do-	B.Sc. Home Sc	Hr. Sec./Inter or Pre-University or its equi.	3 Years.	No domicile restriction.
		M.Sc. Home Sc. in Foods and Nutrition. Child Development and Home Management.	B.Sc. Home Science	2 Years.	-do-
25.	Gov. Girls, College, Ujjain (M.P.). -do-	B.Sc. Home Sc.	Hr. Sec. or its equi.	3 Years	Information not available
		M.Sc. Home Sc in Adv. Home Management and Advt. Reseat Methodology.	B.Sc. Science.	2 Years	
26.	Govt. Home Science College, Hoshangabad (M.P.). -do-	B.Sc. Home Sc.	Hr. Sec./Pre-University with Home Science.	3 Years.	Information not available
		M.Sc. Home Sc.	B.Sc. Home Science.	2 Years.	
27.	Govt. Girls, College, Khandwa (M.P.). -do-	B.Sc. Home Sc.	Higher Secondary.	3 Years.	No domicile restriction.
		M.Sc. Home Sc.	B.Sc. Home Science.	2 Years.	-do-

28.	M.L.B. Girls' College, Bhopal (M.P.).	B.Sc. Home Sc.	Higher Secondary.	3 Years.	Information not available
	-do-	M.Sc. Home Sc.	B.Sc. Home Science.	2 Years.	-do-
	-do-	Ph D.	M.Sc. Home Science.	4 Years. extendable by one year.	-do-
29.	Govt. Girls' College, T.T. Nagar, Bhopal (M.P.).	B.Sc. Home Sc.	Higher Secondary.	3 Years.	-do-
	-do-	M.Sc. Home Sc.	B.Sc. Home Science.	2 Years.	-do-
30.	College for Women, Trivandrum.	B.Sc. Home. Sc.	Pre-degree course or its equi.	3 Years.	Only residents of Kerala are eligible.
	-do-	M.Sc. Home Sc.	B.Sc. Home Science with minimum 50% marks in concerned optional subject.	2 Years.	-do-
31.	Lady Amritbai Daga College for Women, North Ambajari Road, Nagpur (Maharashtra).	B.Sc. Home Science	Passed Hr. Sec. School Certi- ficate or 12th standard exam. or equi.	3 Years.	No domicile restriction.

1	2	3	4	5	6
		M.Sc Home Sc.	Passed Hr. Sec. School Certificate or 12th Standard Exam. or equi.	3 Years	No domicile restriction
32.	Dharmath Arts and Com. and M. P. Memorial College of Science, North Ambazary Road, Nagpur (Maharashtra).				
33.	Vidarbha Mahavidyalaya, Martehzadi Road, Amravati, (Maharashtra).	-do-	-do-	-do-	-do-
34.	Shri Shivaji Arts and Commerce College, Akola (Maharashtra).	-do-	-do-	-do-	-do-
35.	Smt. R.G. College for Women, Akola (Maharashtra).	-do-	-do-	-do-	-do-
36.	Yashwant Mahavidyalaya, Ram Nagar, Wardha (Maharashtra).	-do-	S.S.C./Hr. Sec. or its equi.	3 Years for Hr. Sec. and 4 Years for S.S.C.	-do-

37.	Lady Amrithbai Daga College for Women, North Ambazari Road, Nagpur (Maharashtra).	M.Sc. Home Sc.	B.Sc. Home Sc. or equi.	2 Years.	-do-
38.	University Teaching Dep't., Nagpur University, Nagpur (Maharashtra).	-do-	-do-	-do-	-do-
39.	Sir Vithaldas Thackersey College of Home Science, Juhu, Santacruz (W), Bombay (Maharashtra).	Ph.D. Home Sc. B.Sc. Home Sc	M.Sc. Home Sc. in Ind Divi- sion. XII standard passed with 60% Marks.	2-5 Years 3 Years.	-do- -do-
40.	Marathwada Agri- cultural University, Parbhani (Maharashtra).	M.Sc. Home Sc. Ph.D Home Sc. B.Sc. Home Sc.	B.Sc. Home Sc. with at least higher Ind Class/'B' grade. M.Sc. Home Science. XII standard/Inter with Sc. or its equi.	2 Years. 2-3 Years. 3 Years.	-do- -do- -do-
		M.Sc. Home Sc. Home Manage- ment, Food and Nutrition.	B.Sc. Home Science.	2 Years.	-do-

1	2	3	4	5	6
41.	St. Teresa's College, Ernakulam, Cochin. (T.N.)	B.Sc. Home Sc.	Pre-Degree with Chem. and Biology.	3 Years.	No domicile restriction
	-do-	M.Sc. Home Sc.	B.Sc. Pass with Home Science.	3 Years.	-do-
42.	S.I.E.T. Women's College, 309, Anna Road, Madras. (Tamil Nadu).	B.Sc. Home Sc.	Hr. Sec. or its equi.	3 Years.	-do-
	-do-	M.Sc. Home Sc. in Textile and Clothing, Child Dev., Family Relationship.	B.Sc. Home Science.	2 Years.	-do-
43.	Tamil Nadu Agri- cultural University, Coimbatore, (Tamil Nadu).	B.Sc. Home Sc.	Pass in Higher Sec. Course (A) Academic or (B) Vocational stream or Pass in PUC or its equi. with any other three subjects of the following : Physics, Chem., Biology, Botany, Zoology and Math. (B) Vocational Stream. Biology or Chem. or Home Science.	3 Years.	-do-

44. The Women's Christian College, Madras. (T.N.).	B.Sc. Branch X Home Science (i) B.Sc.	Hr. Sc. (10+2) of Tamil Nadu or its equi.	3 Years.	-do-
-do-	(ii) XA Nutrition and Dietetics.	-do-	-do-	-do-
-do-	M.Sc. Home Sc. Branch III Food Service, Management and Dietetics.	B.Sc. Home Sc. or its equi.	2 Years.	-do-
-do-	M.Sc. Home Sc. Branch III Food and Nutrition	-do-	-do-	-do-
-do-	Ph.D. Home Sc.	M.Sc. Home Science.	2-4 Years.	-do-
45. Queen Mary's College, Madras, (Tamil Nadu).	B.Sc. Home Sc.	P.U.C. or its equi.	3 Years.	Information not available.
46. Annashillengun Home Sc. College for Women, Coimbatore (Tamil Nadu).	B.Sc. Home Sc.	Inter Science.	2 Years.	-do-

1	2	3	4	5	6
	Annashillengun Home Sc. College for Women, Coimbatore (Tamil Nadu)	M.Sc. Home Sc. in Foods and Nutrition, Institutional Management, Textile and Clothing, Home Management, Child Dev., and Extension Education.	B.Sc. Home Science.	2 Years.	Information not available
47.	Andhra Pradesh Agri. University, Rajendranagar, Hyderabad.	B.Sc. Home Sc.	2 Years Inter Exam. or equi. with Phy., Chem., Botany and Zoology.	2 Years.	85% seats for residents of AP and 15% for outsiders.
	-do-	M.Sc. Home Sc.	B.Sc. Home Science with 50% marks.		10% seats for ICAR/GOI nominees.
	-do-	Ph.D. Home Sc.	M.Sc. Degree in Home Sc. with IInd Class or its equi.		No domicile restriction.
48.	S.V. University College, Tirupati (A.P.).	M.Sc. Home Sc. in Child Dev. and Family Relation, Foods and Nutrition and Duthierapy.	B.Sc. Home Science.	2 Years.	Information not available

49.	University of Mysore, Manasaganagotthri, Mysore (Karnataka).	M.Sc. Home Sc.	B.Sc. Home Science	2 Years.	No domicile restriction.
50.	Smt. Vishinder Harghagawardas Dhanoomal General Instt. of Home Sci., Bangalore University, (Karnatak).	B.Sc. (Integrated Home Science). (i) Home Sc. Phy. Maths. (ii) Home Sc. Chem. Botany. (iii) Home Sc. Psy., Eng.	Two-Year Pre-Uni. with atleast two subjects as optional from Karnataka State or its eqai.	3 Years.	-do-
	-do-	BA (i) Home Sc. Psy., Sociology, (i) Home Sc., Psy., Econom. (iii) Home Sc., Psy., English.	-do-	-do-	
	-do-	M.Sc. (Home Management special) (Child Dev.).	B.A./B.Sc. with 40% Marks in optional and 50% Marks concerned subjects).	2 Years.	
51.	Post-Graduate Teaching Deptt. Sambalpur University, Joyti Vihar, Burla. (Orissa).	M.Sc. Home Sci.	B.Sc. Home Science.	2 Years.	Information not available

1	2	3	4	5	6
52.	Sree Narayana College for Women, Quilon (Kerala).	B.Sc. Home Sc.	Pre-Degree or equi. with Home Science as one of the subjects.	3 Years.	No domicile restriction.
53.	College of Home Sc., Assam Agricultural University, Jorhat (Assam).	B.Sc. Home Science	Pre-Degree/H.S.S.L.C. Exam. passed in Sci. group.	3 Years.	-do-
Educational Facilities For Diploma in Dietetics					
1.	All-India Instt. of Hygiene and Public Health, Calcutta	Diploma in Dietetics	Holder of Diploma/Degree in Domestic Sci. or Nursing or MBBS or Diploma of a University Degree with Physiology or Chemistry.	1 Year.	-do-
2.	Instt. of Home Economics, University of Delhi, Delhi.	-do-	B.Sc. Home Sci. from Delhi Uni., or its equi.	1 Year.	-do-
3.	Faculty of Home Science, Food and Nutrition Deptt. Baroda-2.	Degree in M.Sc. (Home) Dietetics	B.Sc. (Home) Degree from Baroda Uni. or its equi.	2 Years.	-do-
4.	Instt. of Hotel Management and Catering Technology and Applied Nutrition, Bombay.	Diploma in Dietetics	Graduate in Home Sc.	1 Year.	-do-

Career Opportunities. Following is a list of career opportunities in the field of Home Science.

Professor, Assistant Professor, Associate Professor, Assistant Research Officer, Extension Specialist, District Extension Specialist, Scientist, Assistant Scientist, Lecturer, Lady Demonstrator, Mukhya Sevika, Child Development Officer, Lady Supervisor, Technical Mistress, Home Science Mistress, Supervisor, Dietician, Instructor, Assistant Mistress, Post-Graduate Teacher, District Social Welfare Officer, Technical Assistant, Junior Dietician, Programme Officer, Trained Graduate Teacher, Joint Director, Senior Research Investigator, Research Officer, Education Instructor, Junior Research Fellow, Research Associate, Specialist, etc.

In addition to the institutes mentioned in the table given in this chapter, there are other institutes/organizations which employ trained personnel in Home Science. They are as follows : District Education Offices, Farmers Training and Examination Centres, State Government Development Departments, Directorate of Social Welfare of every state, Directorate of Industrial Training, Directorates of Education, Food and Nutrition Board (Bombay), Development Commissioners, Indian Red Cross Society, Social Welfare Ministry, Ministry of Health and Family Planning, Ministry of Agriculture and Irrigation, All-India Institute of Hygiene and Public Health (Calcutta), National Institute of Public Cooperation (New Delhi).

Recruitment to the posts and in the organizations is done through Employment Exchanges, Public Service Commissions and advertisements in the Newspapers.

CHAPTER 59

CAREERS IN ANIMAL HUSBANDRY AND DAIRYING

Development of an animal husbandry is viewed as an undetachable segment of a sound system of diversified agricultural efforts. As a calculated strategy for stepping up animal husbandry products 6th Five Year Plan had fixed and achieved the targets as indicated below in the table alongwith targets fixed for the 7th Five Year Plan:

<i>Sl. No.</i>	<i>Item</i>	<i>Unit</i>	<i>Base Level 1979-80</i>	<i>Achievement 1984-85</i>	<i>Target for 1989-90</i>
1.	Milk	Million tonnes	30.33	38.80	51.00
2.	Eggs	Million Nos.	12020	13475	19900
2.	Wool	Million Kgs	33.50	37.15	43.00
4.	Intensive Cattle Development Projects	Nos.	110	122	155
5.	Artificial Insemination	Million Nos.	4.55	8.38	12.75
6.	Frozen Semen Stations	Nos.	28	48	62
7.	Cross-bred Female Animals	Million Nos.	—	4.48	8.00
8.	Intensive Sheep Development Projects	Nos.	21	28	38
9.	Intensive Eggs & Poultry Production-cum-Marketing Centres	Nos.	100	111	129
10.	Veterinary Hospitals/Dispensaries	Nos.	12017	14849	19452
11.	Liquid Milk Plants	Nos.	142	166	207

Support food to agriculture produce is obtained through other major sources of live stock, sheep and fowls. The food obtained from these sources is rich in proteins and nutrition. It also alleviates tension on agricultural food. Importance of the food that is obtained from all these sources is milk which is termed as whole meal and meat which is also rich in contents besides giving a taste to choosy people. From the above table it will be seen that there is a considerable increase in the production which will enable people to meet their hunger needs.

Training—Training in Animal Husbandry is available at diploma, graduate and post-graduate level in many agricultural colleges and universities. The degrees and post-graduate courses are called as B.V. Sc. & A.H.; B.V. Sc. B.Sc. (Ag. & A.H.); Ph.D (Ag. & Vet. Sc.); M.Sc. (Vet. Sc.); M.V. Sc. (Dairy Sc.); B.Sc (Dairying Technology); M.Sc. (Dairing); M.Sc. (A.H.); M.Sc (Animal Sc.); Diploma in Dairy Cattle Production/Poultry Production. For more details, refer the table of degrees awarded by various colleges/universities and special institutions given under the chapter 'Careers in Agriculture and Allied Fields.'

Employment—There are various types of vacancies in different fields at all levels. Following are different posts shown against respective organizations.

(1) **State Animal Husbandry Departments**—Veterinary Assistant Surgeon, Assistant Research Officer, Research Officer, Sheep Husbandry Officer, Veterinary Officer, Artificial Insemination Officer, District Live-Stock Officer.

(2) **Dairy Development Projects**—Assistant Milk Procurement Officer, Senior Veterinary Officer, Milk Procurement Officer, Project Officer, Junior Dairy Bacteriologist, Technical Assistant, Dairy Development Assistant, Extension and Procurement Officer, Project Manager, Senior Veterinarian, Veterinary Assistant Surgeon, Superintendent Artificial Insemination.

(3) **Indian Council of Agricultural Research**—Scientists-S, Scientist-S/1, Scientist S/2, Scientist S/3.

(4) **Agricultural Universities**—Teaching/Research/Extension Associate, Assistant Professor, Associate Professor, Professor.

(5) **Agricultural Research Service Examination**—This is a body which holds a competitive examination to recruit agricultural scientists into various fields of agriculture including veterinary personnel. Fields of recruitment of veterinary personnel are:—

Veterinary Bacteriology & Virology, Animal Reproduction, Animal Pathology, Veterinary Parasitology, Animal Genetics and Breeding, Animal Nutrition, Animal Physiology, Dairy Chemistry, Fish & Fishery Science, Fish Processing Technology, Poultry Science, Live-Stock Production & Management, Live-Stock Products Technology, Biochemistry.

Qualification—Master's Degree in Veterinary Science.

Age—21 to 30 Years.

Plan of Examination—Compulsory Papers.

- | | |
|---|--|
| (i) Essay of 100 marks | } To be answered in English or any other Indian language |
| (ii) General Knowledge
100 marks | |
| (iii) One professional subject with two papers each carrying 100 marks. | |
| (iv) Viva Voce of 100 marks. | |

Applications are invited by the Agriculture Research Service. Completed applications are to be sent to the Secretary, Agricultural Scientists Recruitments Board (B-8) South Extension, Part II, New Delhi.

Following is the list of certain other employment opportunities available for the personnel of Animal Husbandry:

Field Farm Technician, Research Technical Assistant, Technical Assistant, Senior Veterinary Assistant Surgeon, Research Technical Assistant, Bacteriological Assistant Manager, Dairy Supervisor, Information Assistant, Instructor, Farm Supervisor, Senior Scientific Assistant, Senior Technical Assistant, Veterinary Officer, Animal Geneticist, Live-Stock Officer, Farm Superintendent, Assistant Commissioner, Geneticist, Director, Manager, Dy. Director, Assistant Marketing Officer, Marketing Officer, Quarantine Officer, Research Assistant, etc.

Following is the list of employing organizations of the above kinds of personnel. It may be kept in mind that not all the designations and posts are available in these organizations but different designations might be taken as equivalents.

Central Cattle Breeding Farm; National Dairy Research Institute, Karnal; National Dairy Research Institute, Kalyani; Delhi Milk Scheme, New Delhi; Department of Agriculture, New Delhi; Central Poultry Breeding Farm, Hessenghatta, Defence Research and Development Establishment, Gwalior; Central Sheep Breeding Farm, Hissar; Central Cattle Breeding Farm, Suratgarh; Central Cattle Breeding Farms at Dhamrod, Similguda, Anandnagar; Agriculture & Irrigation Ministry, Central Breeding Farm, Ahmednagar; Poultry Project, Chandigarh; Central Training Institute for Poultry Production, Bangalore; Directorate of Marketing & Inspection, Agriculture and Irrigation Ministry; Animal Quarantine Certification Service Centre, New Delhi; Central Hindi Directorate, Ministry of Education, New Delhi.

Employment Opportunities in Private Sector—There are quite a good number of job opportunities in private sector also as may be seen from the two lists below.

Job Opportunities—Veterinary Service Representative, Sales Officer, Sales Executive, Sales Representative, Medical Representative, Poultry Farm Manager, Area Executive Representative.

Employing Organizations—Sarabhai Chemical Ltd., Bombay; Aries Agro-Veterinary Industries Pvt. Ltd., Bombay; Maxin Agro-Veterinary Corporation, Meerut; Wockhardt Private Ltd., Bombay; C.E. Fulford (India) Pvt. Ltd., Bombay; Warner Hindustan Ltd., Bombay; Ciba Giegy of India Ltd., Bombay; Animal Health Unit, Glaxo Laboratories (India) Ltd., Bombay; East India Hotels Ltd., Delhi; Kegg Farms, W-145, Greater Kailash, New Delhi.

In addition to the institutions/organizations mentioned earlier, there are other ones like state owned milk schemes, poultry farms, piggeries, sheep breeding centres, private organizations of the kind which employ veterinary personnel.

Apart from the wage-paid employment there are a good number of employment opportunities in the field of self-employment by setting up cattle dispensaries, poultry farms, dog and cat clinics, etc. There are various schemes under which credit facilities are available for those who want to start their own enterprise.

Employment opportunities in the Defence Forces — Indian Army needs veterinary personnel and such people are recruited into its Remount Veterinary Core. Veterinary graduates/post-graduates who are within the age-group of 21-30 are eligible to seek permanent commissions into Remount Veterinary core as Lieutenant. For Short Service Commission age-limit is 35. Cases of those who were offered Short Service Commission at or below the age of 30 can be further considered for permanent commissions subject to approval of the Service Selection Board which conducts interviews in all such cases. Those finally selected are sent to Remount Veterinary Core Centre, Muzut Cantt., for six months' training. During the training period they are given the rank of Lieutenant. Before recruitment is made an advertisement appears in the newspapers in response to which deserving candidates have to apply to Quarter Master General Branch, Remount Veterinary Core, D.H.O., New Delhi.

There are promotional channels up to the rank of Lieutenant Colonel on the basis of years of service automatically. Thereafter, promotions are effected through a selection process. All these officers enjoy the same benefits as are enjoyed by other similar officers in other cores. Personnel in this are not eligible to claim non-practicing allowance.

Objectives of the 7th Five Year Plan—In order to accelerate growth in live-stock products the first objective that has been envisaged is to provide infrastructure; second is to consolidate the gains achieved during the 6th Plan period under the programmes of animal husbandry; the third is to allow a large section of rural population revolving round the poverty-line to improve their nutritional

and economic status by providing them gainful and fuller employment through live-stock rearing.

To achieve these objectives the following programmes in animal husbandry are thought of:

- (1) Cross breeding of cattle.
- (2) Continue intense breeding amongst cross-breed cattle.
- (3) Development of indigenous breeds of cattle and buffalos.
- (4) Improvement of buffalos through selective breeding.
- (5) Strengthening/expansion of infrastructure of the farms to make available good breeding material.
- (6) Increasing available animal health facilities to safeguard live-stock.
- (7) Increasing production of quality fodder seeds.
- (8) Rearing of sheep and goats to augment production of wool and meat as also rearing of rabbits for fur and meat.

The table given in the beginning of the chapter surely creates hopes for a major jump in creation of employment opportunities for our young people. There is a sizeable increase in all the spheres quoted in the table which becomes a base to conclude that by the year 1990 the targets fixed for the 7th Plan period, so far as the animal husbandry is concerned can be achieved without any difficulty.

The Seventh Plan Document gives sufficient indications of increased job opportunities in the field by setting targets and designing programmes of breeding, rearing, health of animals and strengthening the existing facilities created for the purpose.

Although it is difficult to get exclusive figures of those who are engaged in the field of animal husbandry alone, it can safely be gathered that there would be a good number of employment opportunities for those who would like to consider careers in the field. They have sufficient time to get themselves prepared for the careers.

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